

RAILWAY STATISTICS.

⁷Abridged from a pamphlet, entitled *Railway Reform*—copies of which are procurable at the office of the *Standard*, 10, Pall Mall, S.W.

BRANFLY JUNCTION—22 miles: The bill of incorporation for this company passed in 1877, and the line was completed in 1880. A bad system of mismanagement appears to have prevailed here, and gave such general dissatisfaction that a committee of investigation into the company's affairs was appointed. Charges of the most flagrant nature were circulated, especially the manner in which the estimates have been made, and the work done, the appointment of officers, either sufficient, or who could not devote their time to the company's affairs, and on other points against the directors, to which they have not yet replied. The capital expended on this line has been \$23,000, and the number of passengers for the year ended 30th June, 1882, was 60,311, and revenue \$0,306.

Bristol and Exeter—76 miles: This line commenced in 1838, and extends the connection into the West of England, from the Bristol terminus of the Great Western line; it is now open to Barnstaple—43½ miles—and, up to the present time, has cost £1,449,669. A lease has been granted to the Great Western Company at a rental of about £80,000 per annum, and this line may be considered of equal importance with almost any other in the kingdom, connecting, as it will when completed, the ports of Devon, and, no doubt, eventually, of Cornwall, Plymouth, Falmouth, and even the Land's End, with the Great Western line, and thence with the metropolis: it is probable that these two important companies will be eventually amalgamated.

CANTHARUS AND WHITSTABLE—6 miles. This line was commenced in 1866, and completed in 1869, at a cost of £6,000*00*; it has not answered the expectations of the proprietors; the number of passengers for the year ended 30th June, 1849, was 27,633, and total receipts £200*00*. This is a narrow-gauge line.

CHELTENHAM AND GREAT WESTERN—42 miles : This railway joins the Great Western at Bristol, seventy-seven miles from London, and is completed to Gloucester—19 miles—which distance has been leased to the Great Western for £7,000,000 per annum, until 1848 ; the estimated cost of completing the line is £1,000,000, and no amalgamation of the two companies is contemplated.

CHESTER AND BIRMINGHAM—15 miles: At the time of the passing of this company's Act in 1827, there was every prospect of its being a profitable undertaking, and its connection with Birmingham, by means of the Chester and Crewe branch, seemed to insure the brightest prospects. The Grand Junction Company having, however, interposed and secured to themselves the latter named line, they have effectively broken off all the traffic, which formerly passed through Chester, and by this line for the southern counties, have considerably injured the property, and the shares have declined about 60 per cent. From the last half yearly report, it appeared that the number of passengers during that period was 137,600, the receipts were 10,360, and the total expenditure, being deducted as commenced with the original capital, 12,000.

expenses had been reduced, as compared with the previous half year, £7,000.

CHESTER AND CARLISLE—10 miles. This line was commenced in 1837, and finished in 1840, and forms with the Chester and Birkenhead line, the most direct route to Liverpool. It was purchased by the Grand Junction Company to prevent a diversion of the traffic from their line. The capital expended was £40,000,000, in old, shares, for which the Grand Junction gave the holders 50c. shares in their company, the value being equivalent to the number of shares. It might be considered more an amalgamation than a sale. The aqueduct carrying the Runcorn Canal over the railway, is a splendid work too long in length, and the principal bridge across the river Weaver has eight arches, each of all foot span.

CLARENCE—33 miles. The Act for this line was passed in May, 1898, authorizing a capital of \$100,000; there are three branches, one from Crow Tree to Durham, ten miles, another from Norton Tull-gate to Stockton, two miles, and a third from the Durham branch to Byers-green, five miles.

DUBLIN AND DROgheda—60 miles : It is several years since this line was commenced, but pecuniary embarrassments delayed its progress ; the Eskeagh Loan Commissioners, however, liberally advanced 100,000*l.*, and there is now every probability of the works being completed in another year.

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DUBLIN AND KILMARNOCK—4 miles. The Act incorporating this company was passed in 1831, with a capital of \$70,000. In the year ended Feb. 1, 1830, the number of passengers was 1,300,000, and receipts \$3,207.17. The semi-annual fares were then raised 12½ per cent., when the number of passengers for the next year was 1,200,700, and amount \$4,275.17. The shares now fall to 25 per cent., below par, when the diversion, determined on a bold and liberal line of policy, considerably reduced the fares, when in 1842, the number of passengers increased to 1,700,070., and the shares have now reached 7 premium.

DUNMORE AND ARTHURTON—*15 miles.*: The amount expended on the road to the annual meeting on the 1st June last, was £13,136*l*, at which meeting a resolution was passed for closing the capital account, all further expenses to be paid out of receipts, which amounted in the past current year to £,942*10s*.—showing a deficiency of £43*10s*. in comparison with the preceding year; this sum has only returned 2*1/2* per cent. on the capital expended.

DUNFERMLINE AND CHALMERTOWN—4 miles : On this line the waggons are drawn by horses ; the gross receipts for the year ending 30th June, 1842, were £10,000.

DUNMUIR JUNCTION—4½ miles : The Act for the incorporation of the company was passed in June, 1842, the amount authorized to be raised was £100,000, & the works were not commenced until 1846, and completed in 1848, extending about one mile from Dunmuir, over the river Wear, a new road being made at a cost of £10,000. The passenger traffic on this line is small, like most of the Durham lines ; the principal return is from coal, and here, as in this instance, the mines and railway are the property of the same persons.

DURHAM AND BIRMINGHAM—10 miles: This act was passed in 1853-4; the total amount then and subsequently authorized to be raised was £10,000; this is the longest line in the kingdom on which stationary engines are used, while there are eight, and no locomotives are employed; the receipts for the last account half-year were £18,000. At one time the officers of this company were so fond a state, that a dissolution appeared inevitable, but since its assessment has taken place, and it now pays about 8 per cent. on the capital invested.

Railway Committee—at wife. This company's Act of incorporation gave the legislature in July, 1841, the power to construct a line from Boston to Providence, and \$250,000 in bonds to be issued to help defray the cost. The capital authorized to be used was \$1,000,000, and \$250,000 by bonds at 5%, \$1,250,000. It was originally intended that this line should be constructed through the populous sections of Essex, Suffolk, and Norfolk, connecting London with Norwich and Yarmouth—\$100 miles—but owing to engineering difficulties, the capital supplied by sufficient for the whole, barely sufficed to complete the line to Chichester, a distance which, as far as London extended over the various branches and marshy grounds of the river Ouse, is a fine specimen of engineering skill. It consists of 100 arches, and is 1 mile and a quarter in length. Since the line was opened to Chichester in 1841, it has been extended northwards, through various towns, to the sea.

month last, the receipts have averaged rather more than \$8000. per week.
Railroadmen and their accompanying wives. The Act for the incorporation of
a company was passed in May, 1836, but the line was not opened until July,
1837; the capital was \$12,000,000. In the years 1838 and 1839, the number of
passengers was 300,000, and receipts \$3,000,000., the proportion of third-
class passengers being about Fifty-eight to one, and second to first
as to value. The middle income is about \$10,000.00 per annum; the
expenses during the three years, to the 31st December, 1839, \$9,490.164.

Lines being run in seven parts, or the New Hampshire, Maine, New York, &c., the example for the same period \$1,775,000. The number of passengers for the six months ended December 31st, 1881, was 133,000. **Concord and Claremont**—six miles. The capital for this company is \$1,000,000, afterwards raised to \$1,500,000, and the Act of Incorporation was obtained in 1880; there is a cutting in Abenaki marsh, three miles length, and fifty feet deep; there are also five trestles, stone-ribbed bridges, several viaducts, the principal of which is 170 yards in length. This line opened throughout in February, 1882, and at the half yearly meeting, two months after the opening, the total number of passengers had been 1,000,000, \$100,000 earned since, 143,332; total since, \$80,000—say \$1,000,000. These are very low, and this company has accumulated very little, having 8 per cent, on the capital.

Concord and Worcester—six miles. The Act for this line was passed August, 1880, capital \$100,000. Built as this line is, there are soon forty

TAZMILLOON CATTLE—Cattle raised in Tazmilloon.—The estimates for the cost of the work for the improvement of the Chittenden County cattle are extraordinary differences which sometimes occur in the calculations of breeders. Only four breeders were given in; the respective amounts were, grand total, as follows:—Hornbeck, 1,161,000; second breeder, 1,061,000; third breeder, 1,021,000; fourth breeder, 1,001,000. It is evident that the second breeder has been omitted.

BRITISH NAVIGATION.—Those British seafarers who accompanied Major-General Sir George Grey on his expedition to the coast of South America, have noticed in the capacities of their command many most important principles and methods, to carry out this rapid mode of communication between the important posts which exist in the South Pacific Ocean. Notwithstanding the success of the first operations has not been such as was anticipated, yet the difficulties and the perils of the waters to travel by steam, however, a small party to those islands have succeeded, and those to British waters have been made a model which need be highly instructive to our manufacturers and shipping interests of Great Britain. It is no important fact, that one

RAILWAY REFORM.

A meeting on this subject was held at the Poplar Literary Institution, on Wednesday, the 25th inst., Dr. LOWMYER in the chair. The CHAIRMAN, in adjuring the attention of the audience, for the gentlemen who were about to address the meeting, observed, that railways had in the course of the last few years made so great a change in the commercial relations of the country, and were capable of conferring so much greater an amount of good on the community than they at present offered, if the conveniences and facilities which they afforded were placed within the reach of all; that it concerned every man to enquire into the causes of their, at present, comparatively limited usefulness. In the parish of Poplar the increase in the value of property would be exceedingly great, if the fares on the Blackwall Railway were reduced to two pence and a penny, instead of continuing at their present rates; while there was every reason to believe that the profits to the shareholders would be not at all lessened by such reduction. This meeting, however, it must be remarked, was not called for the purpose of suggesting any scheme that would be detrimental to the interests of the shareholders of this or any other company, but simply to discuss the propriety of endeavouring to induce the legislature to interest themselves, for the general good, with railways, somewhat after the manner by which so much service had been done the country in the adoption of Mr. Rowland Hill's plan of a uniform penny postage. Mr. WATKINS observed, that the nature of railways was such, that from their cheapness and the saving of time in travelling by them, it was certain that they would become much more extensive in this country than they now are, and depending, as we do in this country, for our prosperity on our commercial facilities, unless we make our railway travelling as easy of access to all, by rendering travelling by them as cheap as it is by railways in the continent, other countries will necessarily have an advantage over us, in being enabled to furnish goods at less cost to the consumer than we can, from ours being made dearer by higher rates of railway travelling. It should be well understood that we desired not to interfere with the interests of the shareholders in railways. Their spirited projectors had a right to the fair market price of their shares, and nothing could be further from his (Mr. Watkins') thoughts, than that they should not receive complete compensation. Competition in other modes of travelling was a sufficient protection to the public, but competition with railways was out of the question; when it had been tried it had failed, and must necessarily fail; such heavy losses were entailed on the coach proprietors, who endeavoured, by reverting to the older modes of travelling, to afford the public an opportunity of travelling at a cheap rate, that it was not likely nor to be expected that they would continue the unequal battle. He begged leave to move the first resolution:—"That railway travelling has, ready, to a great extent, and must necessarily still further, supersede all the older modes of travelling, on account of its superiority in saving time, and the low rates they can afford to carry at, but that the poorer classes are excluded almost entirely from the benefit which this mode of travelling might confer upon them, in consequence of the monopoly which its superiority gives." SIR HENRY MORSE, Esq., in seconding the resolution, said that he had not bestowed so much consideration on the subject as to be enabled to enter in detail into the merits of the question, but he was sure that it was a subject that required the attention of all. He deemed it to be a matter of the greatest importance that railways should not be monopolised to the prejudice of the community; and whatever any one came forward to suggest should meet with attentive consideration from the public, as there was no doubt that by frequent discussions the best mode of proceeding for promoting the general welfare of the country, would be generally understood and acted upon. With regard to the Blackwall Railway, nothing could of course be done without full concurrence of the directors, as they had a perfect right to manage their property in any way they thought proper, and could not be expected to make any changes in their own arrangements unless fully guaranteed against any loss. Mr. ALEXANDER LANE said that he was extremely happy that a question of such importance was brought in a practical shape before them. It was very evident that on the Blackwall Railway four times as many passengers could be carried without any increased expense. At any hour of the day a long train of carriages could be seen passing backwards and forwards comparatively empty, while thousands of individuals were obliged to travel backwards and forwards on foot. Now, he, he considered, a most unnatural state of things. No blame could be attributed to directors; their duty rendered it necessary to obtain as much money as they possibly could for the shareholders, and that, in the exercise of their discretion, they fixed the rates at the point which they deemed would pay best. It was, however, to be observed, that on all railways, and indeed the same principle held good with regard to every thing else, "the lower the price was reduced, the greater the extent of benefit." On the pamphlet which he held in his hand, it appeared, that in the week ending the 9th of March, the number of passengers by the Blackwall Railway was 24,400, and the amount received £971.; in the week ending the 16th of March, the fares having been reduced, about 30 per cent., the number of passengers was increased upwards of 31,000, and the amount received was £1096.; in the following week the number of passengers was still further increased up to 39,000, and the amount received £116.; thus it appeared, that by reducing the fares 30 per cent., that amount was effected in favour of those who travelled, and 15,000 persons were enabled to have the benefit of railway travelling, who otherwise would have been deprived of it. He would refer to another instance—the Greenwich line; they had reduced their fares within the last few weeks 30 per cent., and so far from losing by the change, there was a small balance in their favour. This, however, was the evil of the present system—if the balance happened to strike on the wrong side, if it happened to be in favour of high fares, as a matter of course the railway proprietors would charge high fares, they would tax the public 50 per cent., though they might not gain more than 4 per cent. themselves. They did not blame directors, they had as much right as any man in his shop to charge what price they thought proper, and they could not be expected to sacrifice any of their income for the benefit of the public; but they did complain of, they complained of the existence of such a system, by which the interests of the public were totally lost sight of in the most important matters. He would not trespass farther on their time, but begged leave to move the second resolution:—"That in opinion of this meeting, the reduction of the present fares to one-third the amount, would confer a great blessing on the trading and other classes of the country, and might be adopted without loss to the shareholders, as more than three times the present number would be induced to travel, as has been demonstrated on all the lines in this country which adopted low rates."—The resolution was briefly seconded by Mr. R. COOKE.—Mr. W. T. JONES, in rising to move the third resolution, said he had never read Mr. Rowland Hill's pamphlet, and, therefore, he could say nothing about its contents, but as far as travelling from here to London for £1. instead of 4d., he should like it well, and he had no doubt the directors saw their way clear, so that they could assist both the public and their own shareholders, they would willingly do it. The third resolution ran thus:—"Since it has already been proposed, by the author of the very able pamphlet entitled *Railway Reforms*, that his principles be applied upon the Blackwall Railway, in consequence of its being the most eligible, the arrangements being incomplete, that an increase of passengers and revenue has little additional trouble or expense, and as the spirited projectors are deriving no benefit at present from their large outlay of capital, it is equally their interest, with the public, that some change be effected."—Mr. BACON moved, and Mr. FAUCON seconded, the fourth resolution:—"That a committee be chosen, with power to add to their number, for the purpose of communicating these resolutions to ministers in Her Majesty's Government, and the Blackwall Railway directors, and to take further steps for calling public attention to the subject, as may, in their discretion, be deemed necessary."—Members of the committee were named, power to add to their number; the meeting then adjourned.

CAST AND WROUGHT-IRON RAILS.

A Select Committee of the Legislature of the United States having been appointed to consider a memorial from some parties connected with the manufacture of iron, praying the enactment of a law providing that the renewal of the State railways, when required, shall be made with Pennsylvania cast-iron, have made their report, in which the subject is considered under three heads—viz., 1. Of the rolled-iron rail in use; 2. Of the objections to them; and 3. Of cast-iron rails.

In the year 1820, Mr. Bickinshaw, of the Bedlington Iron-Works, took out a patent for rolled-iron rails of the edge pattern, and these were pushed into use in England by parties interested in their manufacture, under the plausible argument that rails of rolled-iron could be made of such greater strength and toughness than cast-iron, in proportion to their size and weight, that great economy would be the result; accordingly, we find, some years after, the Liverpool and Manchester Railway Company were induced to lay down rails of only 35 lbs. to the lineal yard, and, although not fourteen years have yet elapsed, the whole has been so completely worn out, that throughout the entire length rails of 75 lbs. per yard have been substituted. From the investigations of this committee it would appear, that successfully to resist the action of the ponderous machines and trains now used on railways, a certain quantity of metal is necessary, whether of cast or wrought-iron—and the great question is, what weight is adequately necessary to carry on the surface of the rails the traffic now usually going over them. Professor Vignoles (who has, perhaps, paid as much attention to minute details in the formation of railroads and maintenance of way as any other civil engineer extensively employed in their construction), in one of his recent lectures at the London University (which were originally and exclusively reported in the *Mining Journal*), stated, that the top table or button (as it appears in section) of a rolled rail should have a sectional area of at least four square inches, or 40 lbs. to the yard, while the base ought to have at least as much—this, with chairs, giving 90 lbs. per yard as necessary to support the ponderous locomotives of the present day. The last tariff enacted by the Congress of the United States imposes a duty of 25 dol. per ton on all rolled-iron imported; and the committee's report states, that, as the best lines are found to be those with timber sleepers throughout, the strongest objection to cast iron rails—namely, brittleness—is thereby removed, and, as the great object of a railway is smoothness, straightness, and a level surface, the great question is, how are these requisites to be satisfied?

It then goes on to consider the objections to rolled-iron rails, and it appears that although early writers on railroads made out that wrought-iron possessed more strength and toughness than cast, modern practice has proved that cast-iron, either in rails or wheels, suffers much less in wear,

The experience already had proved that cast rails can be employed with success and economy ; those used on the turn-outs of the State railway resemble an inverted U, cast solid, with a base six inches broad and even eight inches of an inch thick, the bottom of the rail on which the wheels run being two and a half inches wide and two inches high, and the weight about 100 lbs. to the lineal yard ; these rails are fourteen feet in length, and move on detached bearings, have been in use since 1835, and are in far better condition than rolled-iron rails on the line laid down at the same time ;—and, after an extensive inquiry, the committee consider that cast-iron rails are the least liable to accident, most durable, and consequently the most economical.

In connection with this subject, Mr. J. Trantwine has a paper in the *Journal of the Franklin Institute* for July last, in which he considers the several properties of cast and wrought-iron rails, as well as the shapes of various sections, and he also recommends the inverted U as resisting a action of heavy bodies in a state of motion better than any other; and a writer considers that it is quite proved that the wear of cast rails is far greater than that of rolled ones.

METHOD OF SILVERING CAST-IRON, AS PRACTISED BY MAJOR JEWREINOFF AT ST. PETERSBURGH.

The combination of iron with carbon (cast-iron) from the ease with which it melts, and the consequent possibility of taking the finest impressions of form, has come into very extensive application. The art of founding converts cast-iron into enormous arches, columns, canons, and also to the most delicate bracelets, ear-rings, &c. Unfortunately the moist atmosphere very soon alters the surface of these objects, and it is found necessary to coat them with paint, which gives the cast iron, the colour which is itself not very attractive, the appearance of mourning. In the present state of the art of founding, cast-iron might easily be substituted by bronze, were it not for its sombre appearance, which entirely excludes this disadvantage may, however, be entirely overcome, from the possibility of plating it with silver; in fact, cast-iron may be readily silvered as equally well as copper and bronze. Some successful experiments which I have made on this subject, induce me to give a short description of the method which I have employed. The liquid for silvering is prepared in the following manner:—Cyanide of potassium, prepared according to Lintig's method, is introduced into a stoppered vessel, and freshly prepared pure chloride of silver, still in a moist state, added; the whole being covered with water, and shaken violently for some time at the ordinary temperature. An excess of chloride of silver is taken, and should a small quantity of it remain undissolved, a few pieces more of the cyanide are added after some time, taking care, however, to avoid having an excess of the latter salt, but always a small quantity of undissolved chloride at the bottom of the vessel. This last circumstance is important, because the liquor contains too much free cyanide of potassium, it is easily composed, and moreover does not silver so well. Before employing it, it is filtered, and is thus rendered perfectly clear, iron and a little chloride of silver remaining on the filter. I effect the plating by means of a galvanic battery of one pair, consisting of a zinc and a coke cylinder, which are separated from each other by means of an earthen diaphragm. The two are placed in a glass vessel containing dilute sulphuric acid, and dilute nitric acid is conveyed into the earthen diaphragm. Experience has shown me that the best mixture for the coke cylinders should consist of four parts by weight of finely pulverized coke, eight parts pulverized coal, and two parts common rye flour. When the cylinders are dry, they are placed in earthen crucibles, in the lids of which there is an aperture for escape of the gases, and are then heated to redness.—These cast-iron objects may be most easily silvered which have not been painted, as the removal of the paint from the surface of the metal is somewhat difficult. A cleaned object is immersed in the silver solution, and connected with zinc pins by means of a conducting wire, and a platinum plate immersed in the liquid at some distance from the object to be silvered, and connected with the coke cylinder. A plate of cast iron, of four square inches surface, is generally completely plated in thirty minutes.—*Silversmiths' Instructions.*

AMALGAMATION OF RAILWAYS

ANALYSIS OF MEETINGS.

Three important meetings have been held during the present week, with view of carrying out the principle, which has for some time been considered and a desire existing, for various lines of railway having a common terminal, or common interest—namely, the amalgamation of the capital, stock, etc., and other property, into one management. The meetings alluded to were—that of the North Midland proprietors, held at Derby, on Monday; that of the Birmingham and Derby Company, held at Birmingham, on Wednesday; and that of the Midland Counties Company, held at Derby, on Thursday. The proceedings at the first were very orderly, and resolution for amalgamation, on the terms proposed by the joint committee of the three companies, was passed unanimously; at the second, resolution was also carried with but one dissentient; in the case of the Midland Counties, however, a strong opposition was manifested towards amalgamation, more particularly with regard to the North Midland Company, which was thought to be the greatest gainer by the incorporation; so the casting up of the votes taken on the motion, there appeared, the amalgamation 1752, and 436 votes against it. Taking it generally, however, the principle appears to be well received by the proprietors of these lines, and may, perhaps, lead to the example being followed by other competing lines in various parts of the kingdom. One thing is quite certain, and of paramount importance—namely, that the great reduction of expenditure, effected by a joint management, must tend to improve the

PROCEEDINGS OF PUBLIC COMPANIES.

BRITISH IRON COMPANY.

A special general meeting of this company was held at the London Tavern, Bishopsgate-street, on Tuesday, the 19th inst., for the following purposes—namely, to receive a report from the directors upon the passing of the Act of Parliament confirming the disposal of the company's property, to re-examine the arrangements made to accomplish the passing of the said Act, to consider the measures for the payment of the remaining liabilities of the company, and to appoint a committee to assist the directors in winding up the concern.

The chair was taken by Sir GEORGE LAKEMAN, Bart., who read the notice concerning the meeting, and also the following report of the directors and committee of proprietors:—

REPORT.

In conformity with the resolutions passed at the last special general meeting, the directors and committee have now to report that, on the 24th of August last, the Royal Assent was given to an Act of Parliament to authorize the sale of the estates and properties belonging to the British Iron Company. In the peculiar position in which the company then stood, their directors and committee considered the passing of this bill as a matter of the highest moment to the interests of the shareholders, and upon it as a right to state, what they regarded, an important act had. At so late a period of the session, the introduction even of the bill, in opposition to the standing orders of both Houses, was attended with the greatest difficulty; but, considering the vast importance of the measure, both to the company and to the numerous persons dependent on the works, the directors and committee persevered in their course, and were finally successful.

In the progress of the bill through Parliament, it was opposed by Mr. Hopkins, one of the shareholders, who made the taking of his shares, and the payment of his arrears, an absolute condition of his withdrawing such opposition. Under these circumstances, on a day's delay in committee would have been fatal, a view of the large shareholders, deeply sensible of the importance of passing the bill in this session, agreed to take these shares upon their own account—leaving it open to such shareholders as might think proper to take a part subsequently in the expense and risk thereby incurred. The arrangement was also made with some opposing shareholders in the House of Lords, in virtue of which, the parties already referred to, engaged to provide a fund towards the payment of a part of their arrears, and to contribute to a public meeting the balance of their shares.

There is no doubt but that the large pecuniary sacrifice made by the individuals who, with a view to carry out, in the most effective manner, an object of vital importance to the company, and expressly mentioned at two successive general meetings of the proprietors, was a measure adopted for the general benefit, and to whom it was attributed the accomplishment of that object—viz., the passing of the Act. The directors and committee being desirous of giving full effect to that part of the arrangement which alone depends upon the company, recommended that that meeting should unanimously approve of the directors forfeiting a number of shares not exceeding 500. There is no reason to believe that the company will, upon the whole, be losers by adopting this course; inasmuch as, in addition to a variety of other considerations, the expense which would have been incurred by withdrawing the bill last session, and proceeding with it in the next, would, probably, have been greater than the sum likely to be sustained by the forfeiture of the shares in question.

The proprietors will, however, understand, that though the Act has passed, the operations of it will depend upon the formation of the new company. A prospectus of this the directors have now the pleasure to lay upon the table, and a copy of it will be sent to each proprietor. In compliance with the express recommendation of the committee of the House of Commons, and with a view to the advantage of the proprietors generally, the time for proprietors to declare their intentions as to taking shares in the new company has been extended to the 1st of November; but, in order to facilitate the execution of the numerous and important operations that will have to be performed, the earliest possible commencement of such intentions is expressly requested. By this date of the proprietors, the balance of the company's debts will be paid to Mr. H. B. Austin, and, to pay this sum, it will be necessary to make calls, in addition to such amounts of arrears as may be recovered from the shareholders in full, and these calls, they confidently believe (the full extent of liability being now ascertained), will be readily met by the proprietors. The directors propose to make a call of £1 per share, payable on the 1st of November next, of which due notice will be given—and they hope and expect not to be under the necessity of calling for another £1 before the month of May, 1842, nor for such balance as may be required to pay off the whole of the existing debt, before the expiration of another six months, when all the liabilities of the company will be discharged.

The CHAIRMAN also read the resolutions intended to be proposed, as follows:

1. That the report of the directors and committee be received.

2. That, in pursuance of the recommendation contained in the report, the directors be, and they are, hereby, authorized to forfeit any number not exceeding 500 shares in the company, on such terms as the directors shall think fit.

3. That the following gentlemen be appointed a committee, to concert with the directors in winding up the affairs of the company—viz.: J. S. Brewster, Esq., M.P.; D. B. Chapman, Esq.; S. Howe, Esq.; C. Kett, Esq.; S. Ricardo, Esq.; J. A. Smith, Esq.; M. F. J. S. Scott, Esq.; W. A. Wilkinson, Esq.

The CHAIRMAN said he had no doubt it would appear rather astonishing to the meeting that they had been able to obtain an Act of Parliament at so late a period of the session, which, he must say, was mainly attributable to the able management of their solicitor, and the valuable assistance received from persons interested in the prosperity of this large concern. It had been attended with certain difficulties, which he would state, as some erroneous actions of their agents had got abroad. The first was as regards 100 shares of Mr. Hopkins, who opposed the bill in the House of Commons, and it having been found impracticable to carry the bill through the committee of that House, unless his opposition was withdrawn, he (the chairman) and some other gentlemen, who had deeply at heart the interest of the company, consented to take upon themselves the payment of the arrears due upon Mr. Hopkins' shares, amounting to £500, and also to accept an encumbrance of the shares, by which the parties acting with him became responsible also for the future calls upon them. They had done this as individuals, on their own account, and not on account of the company, and they would not ask this meeting to indemnify them by voting any pecuniary payment. The company would not be asked for any vote at all in respect of Mr. Hopkins' shares, but the parties who had taken upon themselves the past and future payments upon them, would leave it to the proprietors who approved of what had been done to contribute towards these payments. The other settlement respected about 300 shares belonging to Major Richardson and others; and, though he did not ask the proprietors for any vote in respect of Mr. Hopkins' shares, he certainly did hope that this meeting, by passing the second resolution which he had read, would approve of, and take upon itself, that settlement, and authorise the directors to carry it into effect, by forfeiture of the shares. He, and those who acted with him, had done all in their power to defeat the opposition of these parties, and it was with the utmost possible reluctance he compromised, and to avoid the certain loss of the bill at that late stage of the session, with all the injurious consequences, which could hardly be overestimated, that they had, at the last moment, consented to a general meeting to agree to a forfeiture of the shares which he had mentioned. He regretted that Mr. Hopkins, who was so able to pay, had not acted with more liberality towards them, but, from their position, they were compelled to consent to his proposal. With Mr. Richardson and the other dissentients they were advised to trust, both in the House of Commons and in the House of Lords, where, in the eleventh hour, they were told by their agent (Mr. Austin) that their only chance of having the bill carried was to induce the other of these parties, or they would have to do the whole thing over again, with all the attendant and enormous expenses.

With regard to the amount of £500,000, to be received of the new company, as it was not contemplated to be paid before the 1st of December, a bill will be made in November, which would enable them to make some arrangement for the liquidation of a considerable portion of the dissentients due in November. They had every reason to believe that a very large portion of these dissentents would be held over to a future period. They would have to wait that it was estimated that at least 10,000 shares in the new company should be surrendered for, and, as it was the opinion of the larger proprietors that it would be their interest to join the new company, he hoped others would also bear their part, by taking some of the remaining shares in the new company, for which, however, the time was limited to the 1st of November. Now, suppose their situation was, that £500 was paid on the shares, and that £500 was required to wind up the old concern, that would be £100 per share; then, to take the new shares, suppose £500 were required to commence the new company, assuming that £500,000 would be required, to 50,000 shares, then the whole of their dissentient would be the payment of £500, upon each share, for which the holders of a new share would possess one twenty-thousandth part of the whole of the property of this company, and that under different circumstances from what had recently been—viz., without debt, or nearly no debt, but what the assets could meet, without dissents, with a reversal of trade, and good and effective management. With this prospect before them, and the capacity of making from £10,000 to £10,000 tons of iron per annum, he could not but see a great inducement for the old shareholders to enter the new company, as a means of recovering their losses. He hoped, therefore, that many others would now move forward, and enable them to carry through the plan, and to cover up the new undertaking with spirit. (Hear, hear.)

The resolutions having been proposed and seconded, Mr. Ricardo said it was an obvious whether the number of shares over 500,000, he had mentioned before, and thought it best to be compelled to contribute towards the liabilities of others who were as able to pay as himself. (Hear, hear.) Captain FARNETT observed that, if they looked to those about to be relieved by this settlement, they would find them to be the very parties who had brought about all these difficulties, to which the directors were now subject—we will all you all, and leave the others further to it. (Hear, hear.)

Mr. BROWNE, M.P., thought it probable that would only reflect on the number of shares of that company, without at all reflecting on the conduct of those proprietors who had acted with hostility towards the majority, they could see that the plan of forfeiting their shares was the only method of bringing to a close the affairs of the old company. (Hear, hear.) Looking at the two parts of the session, he could see that the bill was put through greatly to his surprise, and it, as the proprietors have, made no difference (but there is enough reasonable or reasonable) over 500,000, they had entirely given up additional representation, to the bill being proposed at the end of session. He would not, however, say it was not frequently the case for firms to give up a portion of old, former interests in property, when to do so

would be for the general good? As far, therefore, as his judgment went, he must conclude that the committee had come to such a settlement with sound discretion, and had done the best under the circumstances for the whole concern, and he hoped, on calm reflection, the meeting would not hesitate to confirm their proceedings. (Hear, hear.)

Mr. HICKENS said he should like to know what amount these gentlemen had been accommodated by forfeiture?—The CHAIRMAN said the company was not called upon to make any pecuniary sacrifice, independently of the forfeiture of shares. (Hear, hear.) He understood the number of shares to be forfeited was about 400 belonging to the party called dissentients, and, without any wish to meddle with the affairs of others, he had been assured that many of these dissentients were not in a state to pay their calls, even if they were proceeded against. If they had done so, there would have been the consequent legal expenses, and, in consequence of non-payment, the litigation might be carried to Chancery, with the enormous expenditure attending that court, the whole of which was saved by the present arrangement. (Hear, hear.)—Mr. HICKENS wished to know the actual amount that was due on the calls owing by these gentlemen?—The CHAIRMAN said about £10,000.—Mr. HICKENS said he thought also that the directors had acted with sound discretion in not throwing away good money after bad, and he was sure, had they not come to a resolution to forfeit the shares, there would neither be peace nor comfort for the new company. The directors had certainly spent up hill work, and now they had a reviving trade, and better prospects, he hoped the meeting would feel bound to hold the directors harmless for what they had done to obtain this Act of Parliament. (Hear, hear.)—Mr. HICKENS asked if the forfeiture relieved from further liability upon the shares forfeited?—The CHAIRMAN said it was a question of law, but he understood it would have that effect.

Major RICHARDSON said that he had been working for the dissolution of the company for three years, and was not going to stultify himself by impeding it if it were practicable. His party held but 300 shares, amounting to little more than £500. He did not know who represented the other 200 shares. As it was a question of time, and there was a proposal to get rid of their litigation by forfeiting their shares, he had assented to the proposal, for he thought it absurd to expect the public to come into a concern with a Chancery suit hanging over it. (Hear, hear.) When he learnt of an arrangement that had been made with Mr. Hopkins, who was a wealthy man, and perfectly able to pay, and that he (Major Richardson) had been thrown overboard, he immediately applied to Mr. Baker, who said he was too late, and that he was done (laughed), but he would not believe it, and soon after they found him in the House of Lords, determined to save his friends under any circumstances, where the bill had been worked on by the skill of Mr. Freshfield, but, at the eleventh hour, and in the last extremity, such a proposition was made to his party. All he would say was, that he did accept of it, and the sooner they got rid of him the better. (Laughter.)

The CHAIRMAN said it would have been hopeless for them to try to succeed with such opposition and talent against them at the last hour; 300 of the shares were represented by Major Richardson, and 100 more by a Parliamentary agent. These shares were recommended to be forfeited by Mr. Austin. The chairman of the committee of the House of Lords and Commons both expressed their opinions that a wise discretion had been exercised in effecting a settlement with their opponents.

A PROPRIETOR asked if there was any objection to give the names of the gentlemen who were to be relieved by this forfeiture?—The CHAIRMAN said not at all. If he strongly desired it, they should be sent to the worthy proprietor.—The first resolution, that the report be received, was then carried unanimously, and the second resolution, for the forfeiture of not more than 500 shares, was passed by a large majority.—The third resolution, for the appointment of a committee, was then moved and seconded.

Mr. M'LAWRENCE said, as there were a large number of the old proprietors who had, at present, no interest in the new company, he thought they should have a voice in the committee, or their interests might be affected. (Hear.)—The CHAIRMAN thought, under these circumstances, they had better take power to add to the committee, which was agreed to accordingly.—Mr. BROWNE, M.P., thought the suggestion a very proper one.—The third resolution, with the addition of the words "with power to add to their own," was then passed unanimously.

A PROPRIETOR said, on the last occasio, the number of new shares submitted for was about 6000, and he wished to know the number at present?—The CHAIRMAN replied that there had been many additions to that number, and he hoped gentlemen would assist those who had brought it to that extent.—Mr. BROWNE, M.P., remarked that, if the 10,000 shares were not submitted for, the whole affair must fall to the ground, and thus their labour and expense would be thrown away.—The CHAIRMAN said he was happy to say that the price of iron had improved since the last meeting, and that, with the exception of Aberystwyth, they were working now at a small profit. (Hear, hear.) At Aberystwyth they had reduced the works to one furnace, owing to the low price of iron and the heavy guinges, and they hoped, by a representation to the masters, to get these guinges much reduced, so that they might work at a profit there likewise.

Mr. HICKENS asked if the small profit was after paying all charges on those estates?—The CHAIRMAN replied in the affirmative; and, in reply to a proprietor, and that they had not reduced their stock at the present low prices, but preserved it for better times.—Mr. S. Ricardo said there were also losses on other works besides.—The CHAIRMAN considered them to be very trifling.—Mr. STEWART wished to know whether it was necessary that both the calls should fall due in November. He merely threw it out, because many might wish to enter the new company, but would not be able under these circumstances.—The CHAIRMAN observed that a deposit would be necessary for the new company, but the subject should be taken into consideration, as they wished to grant every alleviation possible. He was afraid, however, that the call could not be postponed.

Mr. JACKSON said that he wished it to be understood, that whatever overhanded remarks he had made on past occasions, in regard to nothing personally offensive to the directors.—Major RICHARDSON made a similar observation, and said, as it might be the last occasion of his meeting the proprietors, he would do as act of grace and justice to the honourable chairman, by moving a vote of thanks to him for his conduct on that occasion, which was seconded by Mr. M'LAWRENCE, and passed unanimously.—The meeting then separated.

DEAL PIER COMPANY.

A special general meeting of this company was held at the London Tavern, on Monday the 19th inst., to consider a proposal for extending the pier 500 feet beyond its present terminus. On the motion of Sir JOHN PRATE, Bart., the chair was taken by JOHN WATKINS, Esq., late sheriff of London; Mr. HENRY JACKSON (clerk to the company) read the notice convening the meeting, and also the following statement of the plan for effecting the alteration proposed, as contained in a letter addressed to the proprietors:—

"A proposal has been submitted to the directors by Mr. William Betts to complete the pier by an addition of 500 feet from the present terminus, with a head 300 x 300, with counterfort approaches for landing at all tides of tide, for the sum of £5000. Mr. Betts has further proposed to fad the whole of the masonry, upon being guaranteed pro rata by the present shareholders, interest at 5 per cent, upon the £5000, for a term of five years, and payment of £1000, at the expiration of that period, for removing to take the remaining sum, in shares. The guarantee thus proposed will not exceed a liability of £500 per share upon the shares held by any of the proprietors, and will be proportionately distributed, if not entirely removed, by the profits which may be reasonably expected to be received from play dues, when the work is completed as proposed. And even if the same as to be received should be insufficient, and the work prove a total failure, the guarantee will, in fact, be little more than nominal, assessment as the proprietors who sign the same will be excused from liability by being constituted mortgagees of the play and the land and works thereto belonging, which, with the additional sum now intended to be expended thereon, must always produce when paid more than sufficient to pay off the amount proposed to be guaranteed, and which in such event will be applied for that purpose, before any proprietor is called upon to contribute any sum of money whatever towards the amount of the proposed work."

The CHAIRMAN said, the pier was almost useless at present, and that if its extension could be accomplished, it would be highly beneficial. He mentioned this year that nearly 4000 passengers had been landed, and a great many more would have been landed, and only from steam boats had been landed in the Dover, if the pier had been more extended; and, after this, he had no doubt such an increase would be derived as would easily exceed the amount of the money proposed. As there was every prospect of this application, and the money could be found easily, he hoped the proprietors would forward to execute the proposal.

Mr. WATKINS wished to know how much money had been already expended. Mr. JACKSON said about £10,000, and that nearly all the masonry was paid up. The amount expended in the works had been about £10,000, and in the purchase of land about £5000. There was but a small balance in hand. The facilities were about £5000, and there was about £1000, additional to be paid for the freehold of the land.—Mr. WATKINS thought, before they presented themselves of this kind they would have to pay this £1000, and for, therefore, loaded down as we are of the liabilities.

In reply to a proprietor, the clause of the Committee read, that the whole of the land purchased had been used for the use of the pier, and he had no evidence of its present value.—Sir JOHN PRATE, Bart., thought they would require all the land for the purpose of the pier.—Mr. WATKINS thought they would not carry out their pier, and would then have to bear the value of the land lost.—Mr. JACKSON thought, before they could prove to any proprietor understanding the subject very right to have a right to have a part of their owned property as reported liability and charge, and every other person up to the present time.—The CHAIRMAN said the

SIR JOHN PRATE, Bart., said there could not be the least objection to documents being printed and presented to the proprietors. A motion to this effect was then seconded by Sir J. PRATE, Bart., and agreed to unanimously.

Mr. BROWN had the greatest confidence in the integrity and skill of the directors, but thought a committee of five directors and four proprietors should be appointed to consult and treat with Mr. Betts on the best terms for the proprietors.—Mr. BETTS seconded the motion, which was agreed to unanimously, and the following gentlemen were appointed:—Sir JOHN PRATE, Bart., Messrs. WHEATON, Oakley, JACKSON, and BETTS, directors; Messrs. BINGHAM, Robinson, Biggs, and Montague, shareholders.

On the motion of Mr. BROWN a vote of thanks was passed to the chairman, and agreed to unanimously, when the meeting was adjourned to the 5th Oct.

NORTHERN AND EASTERN RAILWAY.

A special meeting of this company was held on Wednesday the 20th Inst., at the station in Shoreditch. The chair was taken by WM. MARSHALL, Esq., M.P., who stated that this was a special general meeting for the purpose of authorizing the directors to borrow a sum not exceeding £7,000,000, &c., for the extension of the line to Newport. A resolution to this effect was drawn up, which he would leave to some gentleman to propose.—The resolution having been proposed by the CHAIRMAN and seconded by the DEPUTY CHAIRMAN, was passed unanimously.—Mr. MARSHALL (a director) said, he had the satisfaction to report that they had an offer of the whole a coast, at 4 per cent., for five years, which they proposed to accept, subject to the approval of that meeting.—Mr. LATOCK wished to know if there was any necessity to raise the money immediately.—Mr. MARSHALL said, they had made such an arrangement that the interest would be on demand upon them till they required the money.—A PROPRIETOR would like to know of any information that the directors might possess as to carrying the line forward.—In answer to this, the CHAIRMAN requested the secretary to read two letters, one from the proprietors of the line from Brixton to Brandon, who wished to know if it was the intention of the Northern and Eastern to go to Brandon, as to the line might be perfected from Norwich to London, in which a letter, dated the 5th of September, was sent in reply by the directors of this company, stating that they intended to go on from Newmarket to Cambridge, and from thence to Brandon; and that a special meeting would be shortly convened on the subject, when a resolution for extending the line to Brandon would be proposed. (Hear, hear).

The CHAIRMAN said, that as to the extension, they had instructed their engineer to make a survey of the line—that was, from Cambridge to Brandon.—Mr. LATOCK asked if it was to be a single line of railway to Cambridge?—The CHAIRMAN said, he thought the worthy proprietor had better wait till they had full information to present to the shareholders.

A PROPRIETOR wished to know what the average cost would be for a double line to Cambridge?—The CHAIRMAN replied, that they could not exactly say at present. The line towards Cambridge was difficult, but the line north of Cambridge was likely to be a very easy country, so that it would be brought to a low average.—Mr. MARSHALL said, that the line from Cambridge to Brandon would be one of the cheapest lines in the kingdom.

Mr. BROWNE (resident engineer) said, that some part of the line between Newmarket and Cambridge was difficult, but for six miles on this side of Cambridge there was but little difficulty.

A PROPRIETOR wished to know when the Butherford branch was to be opened?—The CHAIRMAN said, certainly in the first week of November.—Mr. KINNARD (a director) said, before the meeting separated, he would call the attention of the meeting to the map in the room, where they would see the course they had chosen, and he hoped they would agree with him that the consequences of it were very encouraging, when he stated that the average weekly receipts since the 1st of July, were £7444. He thought they might now congratulate themselves that the views held out were in a fair way of being realized to some extent, and he had no doubt they would be ultimately realized to the full extent. They might be a little defered, that was all he believed.—The meeting then adjourned.

THE THAMES TUNNEL.

This great national undertaking having been completed, it stands forth a monument, not only of the science and perseverance of the engineer, Sir I. M. Brunel, but of the spirit and enterprise of the country. It may not be uninteresting to our readers to consider, in this place, the circumstances which gave rise to its formation, the difficulties which occurred in the course of its construction, and the expense incurred in working out the project. It would appear that the immense traffic carried on by various mercantile concerns below London Bridge, suggested to the minds of many intelligent engineers the desirability of constructing a communication from shore to shore, for the purpose of affording the necessary facilities to carry out the traffic in question with greater convenience to the parties engaged in it, particularly as regarded the saving of time, so important an ingredient in the commercial and mercantile affairs of this great metropolis. From the number and magnitude of the shipping constantly passing on the river, a bridge was out of the question, and the only plan that could be resorted to that would be free from objections on the ground of injury or inconvenience to the navigation of the Thames, was a tunnel under its bed. It seems that in 1799 a project was put forth for the formation of a tunnel at Gravesend, but the scheme was soon abandoned. In 1804 an attempt was made to construct a tunnel from Rotherhithe to Limehouse, and although a drift-way was carried under the river to the extent of 925 feet, and within 150 feet of the opposite shore, the work was abandoned, owing to difficulties that had occurred, and which the engineer declared at the time to be insurmountable. The plan of a tunnel under the river was, however, always looked upon as a matter of deep interest and great importance, and when Sir I. M. Brunel, in 1826, exhibited his plan for constructing one with a double and capacious roadway, it was not only well received, but liberally supported by men of the first rank, both as regards status in society and attainments in science. No one seems to have given it more cordial assistance than the Duke of Wellington, who was amongst the original subscribers to it. His Grace described it as "a work important in a commercial as well as in a military and political point of view," and added, "that there was no work upon which the public interest of foreign nations had been more excited than upon this tunnel." The spot selected for the formation of the work in question—namely, from Rotherhithe to Wapping—was considered to be the most desirable, not only as regarded the traffic in the immediate neighbourhood of the tunnel, but also as related to the neighbouring concerns. An Act of Parliament having been obtained on the 24th of June, 1825, and £100,000, having been raised by means of shares, Sir I. M. Brunel, the engineer, began his operations; but it was not until the 1st of June 1826, that the shield by which the tunnel was to be worked was placed at the bottom of the shaft formed for its reception. The double archway of the tunnel was then proceeded with; but, on the 25th of the same

land counties in the introduction of coal to the London market, we add the injurious effect produced by the tariff—which, while it afforded encouragement to the import of foreign ores, imposed a duty on the export of our coal—the position in which the colliers in the north are placed is not only to be lamented, but, we fear, without an alteration takes place in the tariff, must in a great measure tend seriously to affect the mining interest in the north.

A correspondent of our contemporary, the *Gateshead Observer*, in treating on this subject, observes with much truth and force—

"It is now verging on a year since this ill-conceived measure became law; and I am very sure that the miners of these two counties have not wrought for more than one-half the money they were enabled to earn previous to the re-imposition of the duty, and, as a matter of course, the shopkeepers and other tradesmen have suffered a diminution of profits in proportion. It does appear, therefore, very curious that they should sit, or rather stand, with folded arms, and not stir themselves in this matter. What I would wish to see done is, that public meetings should be called at all port towns, through requisition to the mayors, to transmit memorials to her Majesty or her Ministers, for the total and entire repeal of the obnoxious tax."

We fully concur in the view taken by the writer, and would, further, call upon the Lord Mayor of London (whether the present, or in perspective), and the Courts of Aldermen and Common Council, to lend their aid, by presenting petitions to the legislature on the meeting of Parliament, to repeal this "obnoxious tax." There was ample evidence afforded during the late session to convince Ministers of the extent of injury sustained by this measure, but the response was—the tariff has not yet had a fair trial; and it will only be when the resources of other countries are developed, and the working collier takes refuge in the "union," that Ministers will discover their error, and attempt to repair it, when too late to be of benefit to the colliery owner or to the operative collier.

It will be seen by a report in our columns of to-day of the proceedings at a special general meeting of the shareholders in the British Iron Company—convened for the purpose of receiving a report from the directors upon the passing of the Act of Parliament, confirming the disposal of the company's property, and to sanction the arrangements made to accomplish the passing of the Act, and further the measures necessary to be adopted for the payment of the liabilities of the company, and the appointment of a committee to assist the directors in winding up the concern—that the proceedings closed in a manner which was creditable to all parties concerned. Having given a lengthened report containing the principal features of the meeting, we do not deem it necessary here to recapitulate them; but, while we congratulate the shareholders generally (whether those who have taken an interest in the new undertaking, those who retire, or even those whose shares have been graciously forfeited) on the happy result terminating, as we hope all questions at law or equity, we cannot do otherwise than offer some passing remarks on the present position of the company.

It will be in the recollection of our readers, that the large sum of 600,000*l.* was named as the purchase-money of this property, from which we believe 50,000*l.* was thrown off by Mr. Attwood. Iron was then at a price more than double that of the present day, and it was considered a good bargain, taking the representations as to the value of the mineral property secured by the company as correct. The legal squabbles which have taken place, and the injury sustained by the company, are too well known to require more than mention on the present occasion. Happily, they are at an end, and arrangements of an amicable nature having been arrived at, the only point to which attention should be directed is the best means of rendering the property profitable to the new shareholders, by unity of action, aided, as there is every prospect before them to hope, by an improved state of the iron trade.

We find that nearly a million and a half sterling has been expended for the purchase and in the outlay on the works possessed by the company (of which we purpose giving a description in an early number), while the new shareholders will come into a participation of the advantages calculated upon from so large an outlay, at a sum little exceeding one-eighth of the amount, or 200,000*l.*

That the majority of these shares will be taken by the old shareholders—or, at least, such as possess the means of doing so—there can be no question; while the new shareholder, who now, for the first time, embarks his capital in the British Iron Company, will derive all the advantages to which those were entitled who have already subscribed eight times the amount. It is somewhat curious that the old company should have been formed when iron was at its maximum price, while this arrangement has been effected at a time when it may be said to have been at its minimum. There has been a considerable advance and improvement in the market since, and we believe the works of the company are not in so bad a position as many iron-works we could name, as, with the exception of Abercavachan, the company is working at a small profit. We believe about 7,500 shares have been subscribed for; and it is confidently expected that the remaining 2,500 will be promptly taken up—several shareholders having awaited the result of the meeting of Tuesday last, ere they determined on the course they would adopt.

KYMER AND LEIGHTON'S PATENT FOR THE USE OF ANTHRACITE ON BOARD STEAM-VESSELS.

We availed ourselves of the opportunity politely afforded us, on Saturday last, of inspecting her Majesty's steamer, the *Hydra*, 750 tons burthen, in which Messrs. Kymer and Leighton's apparatus for using anthracite as fuel has been placed, and we readily avail ourselves of the information we acquired on the occasion, as well as that derived from actual observation, in placing before our readers such details connected with the patent as we consider of interest.

The *Hydra* is a very fine war steamer, of 750 tons burthen, propelled by two of Boulton and Watt's engines, of 110-horse power each, and the arrangements made for applying the patented apparatus appear to us to be most complete, as it is, in fact, substantial. The blast is thrown in from two fans, suspended from one of the deck beams in the top of the engine-room, and conveyed through strong iron tubes to the fire—a larger portion being thrown into the closed ash-pit to keep up the combustion of the fire, while a smaller portion entering by the fire-door, which is closed, as to distribute the air, supplies oxygen to consume the artificial gases given off from the fire. The fans are each three feet in diameter, and eighteen inches wide, having a disc revolving in the centre; the fans, or bursts, are eighteen inches wide by nine inches deep, which is the area of the air-box from each fan, and which move in one main, eighteen inches square, ultimately distributing the air in equal portions to the six fire-places—the number used in the boilers. Thus the full area of the fans is maintained in the fire; and the fans making but more than one revolution per minute, a sufficient blast is kept up, without the dangerous "humming" noise which attends the use of fans in ordinary cases, more particularly when an attempt is made to nozzle or compress the air. Many important advantages must result from the use of fans on board steamers, as it renders the upright funnel unnecessary. No draught is required, but merely an escape for the exhausted and heated air—and which may be conducted in any desired direction, so as to pass over or along either side of the hull; by this arrangement steam ships may be equally well rigged, and rendered capable of using their sails to as great advantage as ordinary sailing vessels. Another circumstance viz.—increased speed, would be supplied by the less resistance to a head wind, offered to a ship without the "unpleasant funnel," whilst at the same time the uniformity of the draught produced by the fan-fans will keep up steam much more effectively than the constantly varying and unsteady draught created by the upright funnel, particularly in暴uous weather, when in comparison of the vessels passing or rolling heavily, it is found a matter of considerable difficulty to maintain an efficient supply of steam. There are only two objections urged against these arrangements—first, that the increasing of the wind in a heavy sea will throw the water out of the troughs, and also that the water becoming heated upon the sides of the troughs would choke the "water ways," but as a diversity of opinions exists on these points, and the objections are pretty easily removed, the

trials about to be made with Her Majesty's ship *Hydra* will best decide the question.

The theory of Messrs. Kymer's and Leighton's process as patented is, that ignited carbon possesses the property of decomposing steam in its passage through it, whilst both the elemental parts of the steam (oxygen and hydrogen) combine with it, and produce the highly inflammable gases, carbonic oxide and carburetted hydrogen; these escaping from the fire receive a supply of oxygen, which, rendering the mixture still more inflammable, ignites, keeping up a steady stream of unbroken flame within the flues of the boiler. Any fuel may be applied, but in our opinion anthracite will ever prove the most effective and valuable; and being nearly pure carbon, in a highly compressed form, great advantage must arise in saving of stowage; and further, as no bitumen or gases enter into its composition, no smoke can be produced under any circumstances. Neither is it liable to spontaneous combustion, while it is also found to bear transport better than any other coal—property consequent upon its hardness. Indeed, should it become broken or even reduced to dust, it may in this state be used in Kymer and Leighton's furnaces, the only thing required being sufficient lumps to keep the grate covered, as to form a substratum or bed for the small. With the ordinary furnace and the common method of burning anthracite, it makes for a time an intensely hot fire, which of course generates an abundance of steam; but as the lumps of coal consume, which they do superficially, they become so closely wedged together that the supply of air becomes exhausted, or at least so far diminished, as in a measure to reduce the combustion and consequent generation of steam. To obviate this difficulty, it is necessary to apply some means to increase the draught; but our readers must be aware that with common bars the use of a blast is altogether impracticable—for an intense does the fire become, that in two hours an entire set of fire-bars would be destroyed. By the admirable contrivance of the patentees, the water-troughs being placed in contact with the grate-bars, they are preserved, and steam is at once supplied to the fire; this supply of aqueous vapour has the effect of converting the intense fixed or local heat of a carbonaceous fire into a volatilised or gaseous form.

Numerous engineers of eminence dispute the decomposition of water by igneous carbon, and contend that a waste of heat must ensue on the application of water; yet, again, we know that the theory and application of it have been sanctioned and approved by some of the most eminent practical chemists of the day—so far, experience appears to be in its favour. We are also aware that some engineers condemn the use of a fan on board steamers, simply on the plea that they have tried them without success. We recollect that some time since a method of burning anthracite on a somewhat similar principle was patented by Messrs. Lejeune and Chambers; by this, it was proposed to throw a jet of steam into a partially closed ash-pit. This application having been found to answer with steam at high-pressure, it was introduced into Her Majesty's steamer *Pinto*, when it was found not to answer, either from the steam being used at a low pressure, or some other cause, since which we have not heard anything further of the patent; but, from all we can ascertain, it proved a decided failure. We understand the *Hydra* to be on the eve of leaving, if she has not already left, her moorings for Portsmouth, on an experimental trip, and we hope, in our next, to be able to report on the success so confidently anticipated by the patentees.

AUDLEY MINES, COUNTY OF CORK.

We last week adverted to the forthcoming sale of this property, but space on that occasion would not permit of entering into detail—while it was our desire, in directing attention to the large extent of proved mineral ground "in the market," to have also offered some observations on mining in Ireland. The latter subject, however, must needs stand over another week, when we propose giving the returns of the several mines for the past five years, and thus demonstrate the value and importance of the mineral districts of Ireland, which may be considered as principally maiden ground; for, although the copper mines for the year 1839, 1840, and 1841 produced 62,230 tons, at an average price of 7*l.* 4*s.* 3*d.*, making in the aggregate amount 466,181*l.* 4*s.* 6*d.*, comprising the produce of ten mines (the whole number at work in the Sister Isle), yet it is to be considered that two of them, viz. Knocknacash and Allihies—the latter in the locality of the Audley mines—produced 38,054 tons, which yielded 319,104*l.* 18*s.*, or more than three-fourths, while of the remaining eight, four produced 21,329 tons, or 73,244*l.* 17*s.*

We have given these figures, to which we shall, on the present occasion, confine ourselves, simply to show that Ireland possesses mineral wealth, which requires only spirit of enterprise, with good management, to afford to the capitalist and adventurer a fair return for the risk incurred, and which is ever attendant on mining operations, whether at home or abroad. The mines of Cuba and Chili, it is notorious, returned in twelve months a profit amounting to nearly 200,000*l.*, and these returns were from three or four mines alone. The county of Cornwall furnishes copper to the amount of 1,200,000*l.* per annum—while Ireland, it will be observed, from the figures we have quoted, does not raise more than one-ninth, and of this quantity two mines alone produce three-fourths, or upwards of 100,000*l.* per annum. This, in itself, affords conclusive evidence of the value and importance of the mines of Ireland—while the comparison with other climes, or districts, is such as must at once be deemed the most convincing proof that the country is neglected, and requires only energetic measures and capital to secure to it that standing in the mining world which would give to the peasant labourer, to the smelter, merchant, and manufacturer, increased business—and to the adventurer a fair, and, we think we are not going too far when we say an ample, return for his investment. We must, however, defer further remark on this subject, as treated generally, and confine ourselves to the mines under notice, and thus fulfil the promise given in our last. It appears that these mines, comprehending an extent exceeding 5000 acres, or thereabouts, to 9500 acres, and embracing the ore of copper and manganese, with vast quantities of slate and freestone, the several properties being contiguous to water communication. From the reports which have been submitted to us (including those of Richard Griffith, Esq., F.G.S., Mr. Adam Murray, Capt. John Monday, and the analysis of the ore made by E. Davy, Esq., Prof. Appius, and R. Griffith, Esq.), it appears that the extreme depth to which any shaft had been sunk was at Cappagh, where they had reached to eighty-four fathoms. The next deep shaft, at Horse Island, we find, does not exceed forty fathoms, which is insignificant when compared with the working of mines in Cornwall, or even Ireland, if we are to judge by the Allihies, or Knocknacash mines. The produce of the ore is gross, as yielding on assay, 33*s.* per cent. of copper; and it is stated, in the report of practical working miners, that the ore is found to improve in quality and produce as the workings are deepened. At Horse Island the mine is reported as producing ore near surface, yielding 20 to 30 per cent. of copper. It is stated, with reference to this ore, that 230 tons of copper are held down extracted, which had realized 200*l.*, thus affording evidence of the richness of the lode, although not of that produce which the ore is said to have yielded on assay—the actual size and quality being, in our opinion, the sole criterion.

Several holes, it appears, have been lately discovered, but we are not aware that any workings have been prosecuted. The manganese found on the estate is represented as being of inferior quality to that obtained in Cornwall, as containing less oxygen—its chief and great value being as a pigment, and for what purpose it is of considerable value, more especially when compared with the price at which it is stated that it can be shipped, not exceeding a few shillings per ton.

The slate is said to be of superior quality, and, from the simplicity of the quarries in the shipping port, may be put on board at a comparatively easy rate, & is admirably adapted for building purposes as well as tiles. The particulars of slate are far too minute to admit of our following them in detail—and, with this brief notice, we leave the mines (to adopt the words of the advertisement of the Master in Chancery) to "the highest and fairest bidder," with the hope, that by a judicious sale, and with honest and commercial management, Ireland may then add to her means of abounding employment—and enhance the interests of Great Britain, of which she forms so important a portion.

ORIGINAL CORRESPONDENCE.

STATISTICS OF THE HYDRAULIC RAILWAY.

TO THE EDITOR OF THE MINING JOURNAL.

Sir,—A letter from Plymouth appeared in your impression of the 9th Inst., signed "A. H. B.," in which the writer calls upon me "further to explain the economy of the hydraulic system." He proposes several questions; in the principal one, he requests me "to take several miles of railway, in which the works are of ordinary character, and estimate the average saving per mile." I esteem myself peculiarly fortunate in being enabled to lay before "A. H. B.," and your readers generally, excellent data on the formation of the Great Western Railway from London to Slough—at the same time, I most request it may be distinctly understood, that, to institute a proper comparison, and to contrast, with full effect, the difference in the cost of a railway way constructed for hydraulic propulsion, with that of one to be worked by steam locomotion, I ought to be able to produce data (which, I regret to say, I am not) on the formation of a railway through some difficult piece of country, such as that of the Manchester and Leeds through Todmorden Vale, or on that of some portions of the London and Birmingham, particularly in its northern direction. I shall say everything in one word, to scientific men, when I state that the country is so flat and easy between London and Slough, that if that part of the Great Western which crosses it, had been constructed for hydraulic propulsion, the general gradient, where any was required, would have been only from fifteen to eighteen feet per mile (1 in 200 to 1 in 333); whereas, by lowering the working speed about one-third, my system is fully capable, when propelling a train of the load of forty tons, of overcoming inclines of 1 in 20, or 264 feet per mile—a steepness of ascent which does not, and cannot, exist on the present steam locomotive system. Hydraulic propulsion will even overcome much steeper elevations, either by further lowering the speed, or (without altering the bore of the pipe) increasing the amount of hydraulic pressure. This I have already publicly advanced, and it has not been questioned—probably, never will. The force, or lifting power, of water, as exemplified in the hydraulic press, appears to be too well known to allow of the hydraulic power claim being made matter of public discussion, through the journals, before the scientific world.

I now beg to state the leading features of the Great Western Railway between London and Slough. The distance is eighteen miles. There is no cutting deeper than thirty feet, nor embankment exceeding twenty, except at the Brent Valley, which is crossed by a viaduct, seventy-three feet above the river Brent. The cuttings are clay and gravel; width at the line of rails thirty-five feet, and slope generally 1 in 12. The quantity of earthwork executed between the two above-named places is 337,000 $\frac{1}{2}$. 18 = 46,500 yards per mile, and the average price of forming into embankments was 1*s.* 10*d.* per yard. The average gradient is about four feet per mile, and the railroad crosses the Grand Junction Canal twice, leaving clear head room of about twelve feet. There are sixty-eight bridges and culverts of brick and iron, erected on this portion of the railway, at an expense, upon the average, of 36*l.* each.

Now, had my system of propelling been then before the public, and the Great Western Railway, at the time of its formation, been planned for its adoption, the line, for fourteen miles out of the eighteen between London and Slough, would have followed the natural surface of the ground, allowing for small irregularities, and the other four miles would comprise low cuttings and embankments, in no case exceeding a depth of ten feet. In fact, the formation of the line would have precisely resembled the ordinary operation of making a turnpike road over favourable and slightly undulating ground. Taking into calculation the quantity of earthwork necessary for approaches of bridges, as well as the general construction of the line, from 300,000 to 340,000 yards would have required excavating in this distance, which, being all in short cuttings and embankments, would have been as profitably undertaken (considering the much-reduced amount of leading) by the contractors at 1*s.* per yard, as the works of great magnitude and length which they contracted for, were, at the average of 1*s.* 10*d.* The earthwork, therefore, on this portion of the line (notwithstanding that required for approaches to the numerous bridges), would have been reduced in the proportion of 2 to 7, and the cost of excavation, on this smaller quantity, in the proportion of 4 to 5.

As respects the bridges, it is evident that, with the hydraulic system, no heavy bridges would be required; for, by adapting the gradient to the locality of roads and rivers, we should simply require apertures of dimensions similar to those upon common roads—in fact, on larger than were requisite to admit through them the trains of carriages and horse-borne passing along each line of rails. Bridges of the simple and inexpensive character used upon the Bristol and Exeter line would be immediately adopted for the system—viz., of brick or stone piers, and timber (instead of the usual arch) to cover the opening. Such bridges would be fairly estimated at 96*l.* each.

It would form no correct criterion of the saving to be effected, in respect of the rails, by the hydraulic system, if the peculiarly formed rail of the Great Western were brought into the present estimate, as it may be considered as an exception to the T rail, which, in its several modifications, is most usually adopted. Now, the T rail may be taken at an average of 7*lb.* per yard, and I believe it will be admitted, it might be conveniently substituted by a rail of 45 lbs.; if the ponderous locomotives and their tenders could be dispensed with on the lines; such being the effect of the hydraulic system, it will save 30 lbs. of iron every yard of rail, and also a corresponding weight in the chairs and keys. As, however, the chairs are cast metal, I shall call the whole saving (taking it all at the price of wrought-iron) only 36*l.* per yard, and I shall, in a similar manner, estimate the rails, chairs, and keys, as now laid on the lines, as equal to 48 lbs. of wrought-iron (or its value) per yard, and I shall place the rails at the moderate price of 6*l.* per yard.

The preceding data enables me to show, as far as regards the three important items of earthworks, bridges, and rails, the first cost of a railway eighteen miles in length, of the character of the Great Western between London and Slough, when constructed for steam locomotion, and to compare that first cost with the amount which, on the hydraulic system, must have been expended for the same purpose.

Fox Break Locomotion.—Earthworks, 337,000 yards, at 1*s.* 10*d.* = 33,000*l.* 10*s.* Bridges, 68, at 96*l.* each = 6,468*l.* Rail, 45*lb.*, 4788 tons, at 6*l.* = 28,728*l.*

Total cost for steam locomotion = 68,200*l.* 10*s.*

Fox Break Hydraulic System.—Earthworks, 330,000 yards, at 1*s.* 10*d.* = 33,000*l.* Bridges, 68, at 96*l.* each = 6,288*l.* Rail, 45*lb.*, 4,900 tons, at 6*l.* = 29,400*l.*

Total cost for the hydraulic system = 68,688*l.* 6*s.*

Hence on this piece of railway, not adapted to develop the power of hydraulic propulsive to overcome the obstructions and elevations of a difficult country, it appears the system would be fully capable of effecting a saving in the three above items of 104,200*l.*, being at the rate of 87*l.* per mile.

But to complete this comparative estimate, other important items must be added. On the hydraulic system no further outlay, for over one year, would go to swell the capital account (or to reduce the dividends) for repairing slips in deep embankments and cuttings, for re-ballasting, for lengthened periods, the continued subsidence of ring embankments, or to repair the drains, culverts, and culverts, contingencies on heavy works. When all these matters are taken into account, I think it will be allowed by most practical men, and among the rest by "A. H. B." (for I presume he is a member of that highly respectable body), that I am considerably under the mark, when I place in favour of the hydraulic system the sum of 100*l.* per mile, as according to the information and consideration of the line in the case in question; and I dare say it will also be generally admitted, that this sum would frequently be doubled, when, what is termed a difficult country had to be encountered. It will be observed I have not taken income into account. There are great ideas, and no measurable instances of what intellect and energy, aided by labour and perseverance, can accomplish; but what are they after all, but merely immaterial results, which frequently have most trivial lists in their formations, and concerned the value of a manufacturer's performance in effecting their completion. I will not in this letter go further into the question of their cost, as it cannot be a gratifying subject. I will merely add that these "necessary evils," according to the steam locomotive system, could never be required in the hydraulic; its powers of acceding, with facility, extremely many inclines, and lines winding round considerable elevations, puts them totally out of the question. This portion of the subject of hydraulic propulsion I have worked out considerably since I published a pamphlet on the invention last year. See my letter in the Mining Journal of March 11.

I need now say a few words on the expense of laying down the hydraulic working appurtenances on a line of railway. "A. H. B." states that in the case I have published, I have estimated at 1*s.* 6*d.* per mile for a double line of rails, but if we will again refer to the pamphlet, he will find that I state, in that case, in most cases, a modified calculation, not including index into account in this letter. On this point I want, to save your valuable space, mere equal rates "A. H. B." to the same Number of the Mining Journal (one pertaining to my letter to H. J. Biscoe, Esq., M.P., in the beginning of March 11th of this year), in which he will find I have described a method of adapting the system to new railways in particular, by means of a single working line, which, while it will simplify the apparatus, will also very considerably reduce the quantity of the more expensive machinery, 6*l.* per mile. Under these circumstances, it would appear reasonable at the present price of rails, to estimate the first cost of establishing the system at more than double, per mile. Let it be remembered that the Norwich and Yarmouth Railway is to be put into the hands of its proprietors, comprising 102,000 yards. Thus, on the first view of the matter, and without considering the immense advantages of power this system would bring with it, it appears that an extra cost of 1*s.* per mile as that between London and Slough, 18 miles, per mile would be caused by adopting the hydraulic system; but to this amount, a sum equal to from 3*l.* to 3*s.* per mile must now be added, as it is measured

it would increase the whole fleet over of the working plant of a railway on the present system, that is, of laying in the first stock of locomotives and tenders, also of building large engine-houses, and extensive workshops, and fitting them up, with steam-engines, machinery, and tools; as likewise of providing coke ovens, &c. The whole saving, therefore, would be from \$3000 to \$4000 per mile—the hydraulic railway being then ready to start for work, and its machinery paid for.

Having found it necessary to trespass so far upon your crowded columns, in replying to "A. H. B."s" first question, I must now be most brief. If "A. H. B." or any other party, wishes me to be more explicit, I shall be happy to comply. In reference to the comparative costs of working, "A. H. B." says, "I make the cost of my system to that of steam-locomotives as 1000 to 1000." I answer—I believe, two or three times—refer him to the pamphlet I have published (to be presented at Mr. Wool's, High Hollins)—see page 40. He will find that one third of the annual cost of the other system approximates a fair charge for mine—that is, when it is adopted by railways already established for steam-locomotives—in which case, interest on its first outlay, all oil to paid off out of the saving (say, from eight to ten years), will be chargeable, as it will constitute an addition; but when interest was chargeable to either system, as to the case of new lines, I make the annual cost of mine (page 40) \$1000—or say, \$1000, with wages (omitted in the pamphlet, by oversight)—and this will make the annual saving total per mile, being equal to the principal sum of \$10,000—a sum much larger than would usually be required per mile fully to equip and establish a railway for hydraulic propulsion, every cost and charge being included; thus a railway costing 10,000 per mile, and saving 6 per cent., would on my system yield 10 per cent. dividend, or more, considering the reduced cost of formation.

"A. H. B." wishes to have a comparison, also, of cost of working my system with that of railways worked by stationary engines. I presume he alludes to the Blackwall—which is either the most costly line in the kingdom, or else it is very near that "bad for economy." The friction of a line of steamer or paddle-boats varies in length, with the dead weight of a corresponding rope, more or less of immensity, particularly when the effect at the curves is taken into consideration. If the rope ever breaks (as it frequently would do, unless it were of enormous weight) when drawing the usual heavy steamer, a total accident might be anticipated, from the awful shock, or break-back, of the curvatures at the moment of fracture, with the part of the rope which was severed from the driving or drawing portion attached to them. These remarks will also apply to "water wheels," when considered as a stationary first power, as they in such case must work through the medium of gear similar to that to be seen working the light traffic of the Blackwall.

"A. H. B." considers it "absolutely necessary" that the atmospheric should be compared with the hydraulic railway. I should feel no objection whatever in instituting such a comparison, if the ingenuous inventors of the atmospheric expressed themselves of "A. H. B."s" opinion. I should be quite willing to abide by the result. In the mean time, as regards the working expenses and respective forces of the two systems, I will merely say, that if you interrogate correspondent with refer to the report (of a few pages in length) of Sir Fred. Smith and Professor Barber to Lord B. Upon the atmospheric, he will perceive it may be anticipated the annual cost of working that system will in some cases, probably, be a little more, and in others something less, than that of steam-locomotives—and that, as respects the relative forces, I presume to work under an atmosphere (though I might work under more, always preserving my pipe of very moderate dimensions), and the gentlemen of the atmospheric railway have succeeded lately, at Derby, in raising their power, I believe, to three quarters of an atmosphere, and have also, I think, announced that they anticipate being able to realize this force with sufficient regularity to consider it their working power. As regards the amount of engine-power by which this is effected, I dare say "A. H. B." is sufficiently informed. I conclude, however, that the atmospheric and by double are two competing systems now before the public—and if Mowat, Glegg, and Barnes are desirous of correcting any errors I may have fallen into (and, if we, quite unintentionally), either in mentioning their system or my own, I can see no difficulty, as I am sure all parties would conduct themselves as gentlemen who were arguing the merits of their respective inventions (whatever they may conceive them to be) at the bar of public opinion, as being their only claim on public support.

Bath, Sept. 12.

J. G. SHUTEWORTH,
TO THE EDITOR OF THE MINING JOURNAL.
We need give insertion to the letter of our correspondent, in reply to "A. H. B."—while we cannot help expressing a wish that the subject had been treated with less prolixity, and that "A. H. B." by consulting Mr. Shuteworth's pamphlet, would render unnecessary contributions so long as the present.

ON THE LIGHTING OF RAILWAYS—No. III.

TO THE EDITOR OF THE MINING JOURNAL.
Sir.—In my last I gave you the signal for general攻擊, I now beg to say a few words as to the present foolish plan of "side lights," adopted, on railway carriages and trains. Wherever signals are necessary, the one cannot be a doubt but the "simplicity of the same is the greatest desideratum," and hence the evil in having so many colored lights upon a train. There ought to be no colored lights appended on any train, unless the end light, or tail light, as it is called; but the guard and engineer ought to have their lights as made that, when necessary or accident required, they could display a red light, and use it then, but not till then. The evil is quite evident. Red lights, being positionally, become blinding to the eye, and become almost unobservable, but they not only are useless and unnecessary, but actually hurtful, and cause the real "signal of danger" to be passed. Mr. Rattle stated, years ago, when he first turned his attention to railways, that it was impossible that there should be "a red light placed where the tail light now is." (Not said the engineer.) Of the 80 is good enough for a light there. "You find Mr. R., as long as it is, but where are you when it is out? you will find the red light will have to be there, be it no fire, or, perhaps, the next train may come, and give you light on the subject;" and at that time Mr. Rattle proposed to put the light at front of the engine, which was, with great reluctance, allowed to be necessary, and was universally adopted. But this shows you the ugly work those who are really conversed with particular subjects sometimes opposition, by now totally ignorant and unfit for the conduct of a great undertaking, when a variety of trades are combined, and required to bring matters into a harmonious whole. It is this foolish junction system that causes the "great expense" on railways—plus adopted which are not suitable, mostly because they have succeeded from themselves. "Division of labour" is the grand (the only) system to produce a well balanced and successful undertaking. Mr. Rattle's plan is then for lighting trains.—The lamp in front of the engine should have three signal colours—and for a signal of danger, while for coloring light upon the side, and give the signal to the station houses or road posts; &c., the guard's lamp, which is fixed on his breast, giving three colours, red, green, and white; &c., the tail lamp, which is to be used with, &c., to give place to many while or bright lamps on the side of the train, for light as you may require, but no colors in them. Colours ought never to be used or shown, until when there is an accident or danger. This simple plan has the following advantages:—The engineer can, in a moment, put in the red or green signal, or the white colour, to those lights on the rails. The engineer can also the guard signal to inform him, so that he can stop in an instant, and instantly anything that has taken place, or within the engine or guard can give the public the signal by their lamp, and the public, having a similar lamp, excepting it by displaying his to the rear station, will either stop him, when necessary, or the poor engine, can be sent to him. This is not only preferable, but cheaper than the plan now in use, and with this difference, that over 100 men are necessary to perform the same, thereby increasing the intelligence in far less time, and by their own efforts, for which purpose the present lamp over 100 men will take place with very little cost; but, however other happenstances, having nothing greatly or interesting, it is not necessary, perhaps, to be adopted, but to every practical working railway this plan deserves their earliest adoption before the winter sets in. Having this plan by night, and the Albert signals by day, there is every reason to say that, of accidents take place, it is the "darkness" who fails, who have not taken advantage of the remedy.

Bath, Sept. 12.

PRESERVATIVES DURING STORMS AT SEA.

SIR.—Your last Number came duly to hand, and, along with it, a vast of valuable information, which, to every right thinking man, must ultimately cause a very extensive circulation of your Journal, the more it becomes known the sort of optional information you collect for the benefit of the public. Since the *Advertiser*, there is not a publication I have seen that so much deserves public encouragement as the *Mining Journal*. Now, to particulars, I have always advocated the necessity of "cork-belts" and "safety-boats," within paddle-boxes otherwise, and when I see that Mr. Murray and Mr. Andrew are both brought into your columns, not by any wish to publish their own theories, but on the "sides of humanity," and for the benefit of the public generally—and this I know to be the fact, for "I myself sent you the address of Andrew, and not till then did he appear as a correspondent;"—that you did not insert my last letter as I could have wished and expected, I now hope you will give this as it is. I had the pleasure of meeting Mr. Andrew, and he mentioned he had sent up one of his "cork belts" to the Admiralty "last week," and as there was to be a Government trial of the "life preserver," he sent his belt to be tried along with the rest at Plymouth. Now, would you believe the result? The belt had scarcely time to be there, far less tried, when letter of immensity size, with large seal, bearing that beautiful emblem the anchor (but, also, no figure of "hope," for it seems there is precious little of that to be expected from that quarter), arrived, but the contents had scarcely what we call common civility, merely stating "that the Admiralty had no intention of furnishing the navy with cork-belts"—signed "Timothy Moore." Now, Mr. Editor, this is not production from the disappointed inventor, as you and others might suppose, for the inventor imagined right heartily at the ignorance and inactivity of the officials at head-quarters, and, "perhaps (he said), if I had been Lord John, or Sir Thomas C., or some such big man, or with R.N. attached, it might have been all well, and smooth language of beauty, with other results equally as sweet—plenty of Government money to carry the same into play." But, to arrive. We have seen boat after boat, often with its complements of crew, and multitudes of passengers, hurried to safety by the "cold" indifference of those who can show and set the example to the nation, and from whom improvements for the public safety can be brought into general use, by the very parties who are keeping back all chances of success, for they often give those who are spending their time and talents in their country's good such a sickness that they get almost to despair—having spent money in vain, and had contempt thrown upon the best of plans, and which the public has been slowly in possession of, and approved by general adoption—but, like the Post office plan, must be considered outside by "Government officials." This latter, Mr. Editor, is not written for a pif for Mr. Andrew, but for a more praiseworthy object; it is to let the shipowners, masters, and the public—those who travel by sea—know that Government will do nothing as regards the safety of the public, and, therefore, the "public must take the matter up, and, as they see the necessity, cause meetings to be held, and resolutions passed, and committees of safety appointed." If informaries are started for the "sick," an honest society should be started for the "public safety," and let justice be done to Mr. Murray and Mr. Andrew—I could give another name, who might appear as one of the disappointed, who is equally a benefactor to the seafaring class, but when, like the rest, can laugh at the "wingers," knowing that the time will come when "merit will be rewarded," in spite of the "Trinity or Admiralty boards."

AN INVENTOR.

Huddersfield, Sept. 12.

ON BOILERS AND FURNACES—MR. WILLIAMS AND MR. SCOTT.

TO THE EDITOR OF THE MINING JOURNAL.
Sir.—I have only just seen the letter of Mr. C. W. Williams in your Journal of the 10th of August, and, in reply, will leave it entirely to himself to assert any better whatever for the experiments—any description of trials—the drought to be good or bad—the combustion quick or slow; but the experiments to be made on the same boiler, and all the other circumstances to be exactly similar, or, as nearly as possible.

JAMES M. SCOTT.

THE COPPER TRADE—ENGLISH COPPER COMPANY.

TO THE EDITOR OF THE MINING JOURNAL.
Sir.—Now that the copper men at Swansea have returned to their work, I took a few remarks on the "strike" will not be considered ill timed. First, then, with respect to your several leaders on the same, I confess, on not reading them, that I did consider you were rather severe on the masters, but, on re-considering the subject, I recollect that the English Company has regularly paid 8 per cent. per annum on their borrowed capital, and 5 per cent. per annum to the shareholders. This, as you may suppose, rather changed my opinion as to the property of the step taken by the masters, for, if the trade will afford such dividends under its present depressed state, I do not consider the masters have much cause of complaint. I am aware I may be met with Mr. Vivian's assertion, that there have not been any profits for some time past; but, in reply to which, I would demand the cause of the English Company doing as much better than all others. With respect to other questions which have arisen from the strike, such as ticketing monopoly, reducing charge, reduction, an assay shirk, &c., I believe no gains whatever would result to the miners from such alterations, for the smelter would only give for the over such a price as would keep him a fair interest on his capital, and if Mr. Vivian be correct with respect to the masters generally, the master has had, for some time past, more than he could reasonably expect for his men. I am in no way interested in the smelting business, but, as a miner, am perfectly satisfied, and think we should let well alone.

London, Sept. 12.

A CONSTANT READER.

TO THE EDITOR OF THE MINING JOURNAL.

Sir.—The remarks in the change of management of the Blaenavon Iron and Coal Works, by "A Lover of Fair Play," in your Journal of the 18th inst., are very erroneous made. I need not bring forward the name of Mr. Doubts, or any other agent there employed, whatever might be their expertise, qualifications, and integrity, but shall at once relate the assertion of your correspondent—though made from his own professed knowledge—that "two years older, expert, one was put aside for inexperience, at a considerable additional expense to the unfortunate shareholders." Now, Sir, my arguments adduce close connection with those made to me, without fear of contradiction, to assert, that had the same order of things occurred in reference to the management for one year out of the two, the masters must of necessity have been thrown out, and all labour connected therewith suspended, and even hundreds thrown out of employment; but the case is different—the improvements in the different departments of the works during that time are manifest—both old and new—which has enabled the company, during the progress of the same, to compete with their neighbours; and now, with the prospect of an improved trade, and the works in efficient state, the shareholders have a right to expect something more substantial than a "Babylon of a scold," as the expression derived from some "fudge."

Abertillery, Sept. 12.

A FRIEND TO RAILWAYS.

TO THE EDITOR OF THE MINING JOURNAL.
Sir.—I should be sorry to have it to be considered, from my remarks in your Journal on the 20th instant, that I think highly of an Act of Parliament to regulate on the excess of every packet to carry on board an emigrant ship of not less than 1000 passengers, would necessarily be much the worse packets. In the meantime, let some congressmen avail the opportunity of emigration, and it may contribute to develop them, will be absolutely ruined and their consideration for the future—possibly, for the time of their passengers. This also would pass the way for a much-digested Act of Parliament, but, as being concerned with the health of the insidious vermin of emigrants, an Act of Parliament to prohibit the only remedy. When a committee and gallant 40 men, or consisting 40 agents, who does not apply to ordinary road carriage, to it will be necessary that they should be allowed to get off again, with services better than we have mentioned, probably, sufficient—emigrant's passage and more bags, as it seems of bad damage, and to sell out to us this day were again, without having thus ruined all risk of searching the bags of the passengers, whereas the rate of the sea will provide of it? It should, surely, be received willingly on the captain, when the vessel has struck, to the last place, and as the first movement, to put down the bags, and above each of the passengers as they desired it to take them, but the right to enter them should be made after the bags were in the bags, or there

WOOD PAVING—PATENTS AND PATENTEE.

TO THE EDITOR OF THE MINING JOURNAL.

SIR.—In the remarks of your "Constant Reader," in last Journal, I think he overlooks the bearing of the case of Stead's decision, as Mr. Stead's claim is "for a method of paving with wooden blocks, of various forms." Now, it may be a hard case for the forty-one who have taken out upon Stead's idea to pave upon the wood principle; but, in my opinion, were it coming again before a jury, honest men would say (independent of legal quibbles or opinions, generally given according to the law)—"Stead brought out the plan of paving with a wooden block, and he should have the benefit." I believe this was both the judge and jury's opinion, which they, as conscientious men, gave and expressed. In all cases, I would say, do away with sophistry and cast—let men be honest and honestly dealt with—let the inventor live—and I trust the public, as well as the judges and juries that cases of infringement come before, will henceforth award the due fruits to this most deeply injured class—those who, in their little chambers, enclose, in the dead hour of the night, the "midnight oil," in bringing forth the many useful and philanthropic inventions, which have a tendency to add comfort, safety, and convenience for society, as well as giving a new stimulus to trade in the various and multitudinous work-shops of our great and glorious kingdom. Even in "Republican America" the inventor is more sure of his "reward and just protection" than in England—is not this a national disgrace? Trusting you will, for the advantage of inventors, insert the above,

Grenada, Sept. 20.

ADVERTISING.

WOODEN PAVEMENT.

TO THE EDITOR OF THE MINING JOURNAL.

SIR.—I am sorry at having again to appear before the public with regard to the discussions on the subject of the patent for wood paving, but Mr. Prosser's communication, in your paper, for today, with an opinion and letter, both signed by Mr. Carpenter, entitles me shortly to trespass upon your columns for the third time.

John Duncas, Esq.—I have looked into Mr. Stead's specification, and am of opinion that the Attorney-General would not allow of a distinction of the words "and private," because the same given would be, that it was not new for private use, but, supposing the Attorney-General permitted the word "and private" to stand, the same defense would equally prevail against the patent. This cannot have a patent for using a mode or process which was then publicly known to have been used as private ways. The public using is just as strong against the patent under the altered title as against the original title. The only way will be to go to the Privy Council, provided the previous publication has not been to any general extent.

With regard to the extent of invention secured by the specification, I am of opinion that it is incalculable and every angular form of wood blocks, and would require no alteration.

(Signed) Wm. CARPENTER.

Sept. 5, 1841.

In September, 1840, when I wrote to the newspapers a letter, having reference to nothing but the question whether the Metropolitan Company's blocks are an infringement upon Mr. Stead's patent, I set forth, in that letter, that portion only of Mr. Carpenter's communication which has reference to this question. Had I set out more I should have done wrong, for I should have quoted matter irrelevant to the early outbreak in hand. If my letter of the 12th inst., in the *Metropolitan* print, had treated of the validity of Mr. Stead's patent, then, certainly, all Mr. Carpenter's communication was material, and had I omitted any part, I should have submitted silently to Mr. Carpenter's severe rebuke, that "it was highly improper for a professional man to give an opinion on a point of law without having consulted the Attorney-General." But as it will now appear that I have only done what was logical and perfectly correct, in omitting the first portion of Mr. Carpenter's letter, not relating to the only question I was discussing, and that his remonstrance (overseen by me in shape, until exposed in print in your paper) is patent and groundless, I would beg, in any term, publicly to apologize to him, as a professional man, a little correction.

This correction consists, shortly, in saying that gentlemen professing to give scientific opinions upon which juries and others are used to rely, should not give two opinions upon one subject to two clients—the one opinion being exactly the reverse of the other. Mr. Carpenter's opinion to Mr. Stead is, that his patent "includes any and every angular form of wood blocks," but the purport of his opinion of the 14th inst., to the *Metropolitan* Company, is the contrary—viz., that although their wooden blocks are angular blocks, the use of them is not an infringement of Mr. Stead's patent. My letter, quoting Mr. Carpenter's opinion along with those of such evidence in patent law as the Attorney-General, Mr. D. Pollock, and Mr. Bonham, was a compliment to him, and intended by me as such, for I spoke of him with great respect; but if he will prove the compliment to be undeserved, and for establishing his own opinion to be wise, I, personally, can have no objection, and Mr. Stead cannot feel the loss of such an advocate.

In reference to Mr. Carpenter's advice, given to the *Metropolitan* Company, that Mr. Stead's patent is invalid, I would only remark, that the grounds of invalidity specified by him were before the special jury at Liverpool, and as they found a verdict in Mr. Stead's favour, I have the impression that Mr. Carpenter's decision need not give any client any consternation. The *Metropolitan* Company are welcome to its value, as rendering, in Mr. Prosser's language, everything superfluous. All stray drowning persons will catch. I am, Sir, your obedient servant,

JOHN DUNCAS.

* The verdict of the jury puts this at rest.

THE METALLIC CEMENT.

We have had so many new remarks brought under our notice of late, that it is very difficult to decide upon their respective merits, and, as all claim to possess peculiar advantages, we are sometimes puzzled to ascertain which is the most worthy of our recommendation. The best test of worth is experience, and therefore we are at all times anxious to be able to appeal to it in confirmation of our opinions, whether favourable or otherwise, of those articles connected with the mining interests, which are more immediately brought before us. In this respect we this week introduce to our readers affords us the most complete satisfaction—ten years' trial having confirmed its possession of these merits which, upon an investigation into its properties, we should have been inclined to allow it, even without such testimony. It is composed of a mixture of metallic sand with blue flint—blue being the hardest grit and most granular in its form of any that we have ever seen; from its chemical affinity to the lime, or from the gradual oxidation which results from the action of the atmosphere upon the combined substances, the cement thus formed increases in hardness with age, until it attains a solidity equal to that of granite—to the lighter and more pliable descriptions of which it bears a striking likeness when the work is well executed. From its hardness and its imperviousness to water, it forms an excellent concrete and mortar, as the mere fact of its being used for the foundations of the new Houses of Parliament, and in the Kilby, Priory-hill, and Kenil-worth-green tunnels on the London and Birmingham Railway, sufficiently proves, and the same circumstance, added to the freedom from vegetation, recommends it as a lining for tanks, reservoirs, &c. As a cement, it is most useful for all the purposes to which Roman cement and the great variety of outside structures are usually applied; it is capable of being worked in a form equal to that of mortar, or it may be brought to a close resemblance (as close as not to be easily distinguished) to Portland stone, granite, &c. It is of course needless to add, that every description of architectural ornament can be executed in the metallic cement, and we have seen specimens which are most satisfactory, as respects sharpness of outline, beauty of surface, and uniformity of colour; indeed, in this latter quality, combined with its freedom from vegetation, and its requiring no paint, exceeds its great superiority over every other similar material. The Alfred Office, in Larkhall, will afford our readers an opportunity of judging whether we have not underrated either than exaggerated the merits of the article in this respect; while some new buildings at the corner of Bellahouston, in Glasgow-street, afford convincing proofs of the interesting qualities.

As an aside stroke, we say no more than that the qualities in which we have exhibited our merit render it equally valuable for this purpose—and, generally, its great economy will certainly enhance its other merits in the public estimation. Such being the case, we are certainly prepared cordially to recommend the specific cement to the attention of all those who are building or intend to build.

New Metallic Thermometer.—At a recent meeting of the Patent Academy of Sciences, Mr. Clement exhibited an instrument, invented by him, for measuring the temperature and tension of vapour in boilers of high and low pressure. It is composed of two plates, one of silver and the other platinum, soldered together and rolled back into one of the extremities of which is fixed, and the other is attached to a vertical copper stock running in the direction of the axis. From the difference of dilation of silver and platinum the temperature causes the latter to vary, its upper extremity commanding a rotary motion in the copper stock, and by means of cog-wheels or ratchet-wheels working on a graduated dial, one of which indicates degrees of temperature, and the other tensile of degrees. This metallic thermometer has been examined and tested by a committee; they placed it on board the *Frigate*, a steamer of 30 horse power. It was so cool, and in communication with the boiler by means of a copper pipe. The fire was extremely raised and heated, and the action of the instrument was regular, obeying the laws of variation of temperature.—This instrument will be of equal value, and above all other contrivances at present known, when the water is in the boiler becomes hot and the plate contracts—a case of high tension, and always attended with great risk. It will show the high temperature of the resulting vapour, the tension of which is not increased. In fact, the committee are in this thermometer the owners of the exact form of vapour and its temperature at any moment.

South American Glaciers.—A recent sitting of the Patent Academy of Sciences was occupied with a report on a communication from M. D'Urville. "On the Geology of South America," in which the author states that the physiography of that part of the globe bears a strong resemblance to that of Europe, and that whence a difference exists, it is by no means so striking as might sometimes imagined.

Brassine and Brassine

MINING IN THE EASTERN DISTRICT OF CORNWALL.

(From a Correspondent.)

SOUTH CARADON.—Although immense returns have been made from this mine, and large quantities are still estimated to be raised, but for the last six weeks she has not looked generally so well, yet there exists every indication of an early improvement.

WEST CARADON.—Appears to have gained in appearance what her neighbour has lost, and promises to become a formidable rival. Most of her levels are looking extremely well, especially the fifty fathoms level, both going east and west.

EAST CARADON.—They are driving an adit level north, with a view of intersecting the South Caradon great hole; a very desirable object.

TORREBURY.—The engine-shaft is sunk about nine fathoms below the twelve fathom level, which has been extended east and west on the course of a very flanking hole, containing some fine stones of ore. The underground operations have been greatly retarded in consequence of the scarcity of water to work their pressure engine. Most of the agents in the neighbourhood consider it recommending the immediate erection of a steam-engine, for, although the provision now existing, in forming an extensive pool, may furnish a supply of water during winter, yet there remains but little doubt the same inconveniences will be felt next summer, when her increased depth will require greater power.

MARKE VALLEY.—The new engine-shaft is down about thirty fathoms from the surface. Although her sales do not at present stand high on the list of ticketing papers, yet no one in the district better deserves a spirited company, for there is but little fear of her fully returning a fair remuneration for the outlay. When the new shaft is down to the proposed depth, additional facilities for future operations will be afforded.

PHOENIX MINES.—The eastern levels of these mines are extended into what is anticipated most profitable ground, and from the flanking appearance of this vast hole in these levels, the most favourable anticipations may be indulged in.

WESTCOTT.—This promising little adventure is progressing. An engine-shaft has been sunk, and two levels extending, whilst a water-wheel is in course of erection. Here every facility for water machinery exists, from its proximity to a never-failing river.

LISKARD CONSOLS.—This mine is about two miles north of Liskeard, upon the estate of R. Board Antis, Esq., of Liskard, and commenced working upon the recommendation of an intelligent agent of the neighbourhood. They have sunk the engine-shaft forty-five fathoms. At this level the north hole is found nine feet wide, composed chiefly of a vast body of mastic, and within the last few days they have also cross-cut the south hole, which is of such a promising character, that the proprietors are anticipating an early day for the consummation of their wishes.

WHEAL GILL.—The resumption of this mine has commenced, by the preparation making for the erection of two water-mills. The engine which formerly stood here having been removed to West Caradon.

WHEAL ROBIN. (in the parish of St. Neots).—Capt. H. has recently returned from his first metropolitan visit; but what effect any transfer of shares may have upon the future prospects of the mine, certainly, nothing has yet been developed; nor has any improvement taken place in his absence, for the levels are at present poor, i.e. not rich.

CALLINGTON MINES OR REDMOOR.—They have cut a hole in the fifty fathom level, but whether it is an east or west hole, or a canter, has not been yet ascertained. It is poor, but very encouraging. The other levels are not rich, but some are productive. They are going on actively with the new engine at the lower or south mine, which will be ready to commence working in about three weeks.

HOLMESTON.—The ends upwards are looking poor at present. They have cross-cut the north hole at the 110 fathoms, or bottom, level, and commenced driving east and west by the same; last week the hole was taken down. Going east they have an excellent course of ore, some places three feet big, but going west it is not second. The deep adit level at Lady Beau, or East Holmeston, is continued to be driven, but looking very poor at present.

DANESCOMBE (in Calstock Parish).—This little mine, which promised so well at one time, will no longer stand on record as a working mine. Her engine has been purchased by the Tamar Consols Company, and her stemmers removed to Marke Valley.

WHEAL MORASHAAR.—The workings on this promising seat have been temporarily suspended, preparatory to some arrangements, but only to be resumed very shortly, with more than ordinary energy.

GUNNIS LAKE.—Very little is being done here at present, perhaps on the return of the spirited proprietor from the Peninsula, activity may prevail.

DEVON.—ON THE BANKS OF THE TAMAR.

TAMAR CONSOLS, OR SOUTH HOOD.—This company have considerably extended their operations—having erected an engine on the Cornish side of the Tamar, and are in course of sinking the engine-shaft upon a marsh, therefore as they proceed. Query—Would not iron, or an iron cylinder, be preferable, being more secure and permanent?

BEDFORD CONSOLS.—They are progressing here under a very general, and, at the same time, encouraging opinion, of this being ultimately a good mine. The levels at present are not very productive.

There are several little experiments going on on each side of the Tamar, by operative miners, who, from their opinion of the holes, have procured the sets; and, with full confidence of success, have invested their limited means, and, in most instances, been eminently successful. It is highly gratifying to witness the zeal and perseverance displayed in carrying out their momentous undertaking; but individual enterprise does not always meet with merited reward, for, their financial resources being inadequate, by protracted delay, to meet the expenditure, the capitalist is liable to their assistance, and, in many cases, shares their hard-earned profits.—*Devonport, Sept. 20.*

DISCOVERY OF COAL NEAR BARNARD CASTLE.—The men who have been boring for coal in the Flatts Wood, after a few weeks' labour, came to a sum of coal at the depth of twenty-six fathoms from the surface, on Wednesday evening; they immediately desisted working until the arrival of the gallery viewer on Tuesday, when the thicknesses of the seam were found to be 3 feet 6 inches, and the coal was pronounced to be of a very superior quality. It is thought that there is a second seam running below the first, of a greater thickness. It is expected little time will be lost in reducing the pit workable, as it will be of inestimable benefit to Barnard Castle and the neighbouring country.—*Derbyshire Advertiser.*—An exciting incident is told in connection with this discovery. The Duke of Cleveland, living at Barnard Castle, called at a barber's shop for the purpose of having his hair dressed. The barber, not knowing his distinguished customer, entered into free conversation. The topic being the coal workings to operation near the town, his Grace inquired what was likely to be the result; to which the *article* replied—"there is only one obstacle in the way of a shaft being sunk immediately, and that is, it is uncertain whether the Duke of Cleveland will grant his lordship, at the same time, mining rights." "Indeed?" replied his lordship, at the same time smiling, we doubt at the success of his own inquiries.

PIT BONERS.—A case relating to pit bonds was argued at great length before the magistrates, at the Justice-room, in this city, on Monday last. A summons had been granted to Michael Walker and others against the owners of Glenside Mine Colliery for a balance of wages unclaimed to date to them, and the principal agent attended on the day in question to answer the summons. Walker, one of the claimants, stated that he had only received during six fortnights (the usual time of payment) £1. 12s. 10d., whereas the bond guaranteed £10 per fortnight, and that a balance of £1. 12s. 10d. was, therefore, due to him. The argument rested on the construction which was to be put upon an expression contained in the bond, which was this—that the men should "earn one with another £10 per fortnight"—whereas the pit had not been worked more, on an average, than seven days in the fortnight from the commencement of the date of the bond up to August last, and the men had consequently received a less amount of wages. It was, however, shown that Walker could have earnt more money than he had done if he had from the first worked a half day's work of eight hours regularly, which he had the opportunity to do, and the Bench, after deciding that the bond was very difficult to understand, and that a portion of the several clauses had a previous bearing, decided that on the average of the four preceding consecutive fortnights, the claimants had received the specified sum of £10. per fortnight.—Mr. Walker, "the prisoner" however, "condemned the case of the claimants."—*Derbyshire Advertiser.*

THE CHAL TRADE.—The importations of coal into London last month were 306,000 tons, whilst in August, 1843, they amounted to 301,000 tons, showing a decrease of 30,000 tons on the month. On the eight months ending 31st of August, 1843, as compared with the corresponding period of last year, there has been a decrease of 60,000 tons, the quantity imported in the latter period being 1,000,000 tons, whilst this year it has only been 940,000 tons.—*Gloucester Chronicle.*

GENERAL STATE OF TRADE.—Mr. Povey, in a paper on the home required for the generation of vapour in various districts, gives the following table of the comparative power of different condensers:—Hydrogenic acid, 10; ether (chloroform), 20.7; benzene, 44.7; spirit of wine, 49.4; alcohol, 59.4; water, 100; steam of temperature, 100.8; air, 173.7; weight, 210.6; mercury, 330.

Isle of Wight Successes.—Lately a number of aditoidal galleries and Mr. Jack's Zinc Works, Newland, to inspect a very curious model in size of new patent zinc window shutters. The shutters slide up and down with the greatest ease; and, when closed, they look like curtains in the winter weather, so that it is impossible to open from the outside even with an instrument as heavy as a pick-axe, or the ordinary implements of house-breakers.

WHAT IS THE CAUSE OF THE EXPLOSION ON THE DAY AT SCOTCH?—The air being then dry, reforms were red or heat-making rays, and as dry air is not perfectly transparent, they are easily reflected in the bushes. Such is the explanation given by Sir Humphry Davy in his beautiful Ratiocines.

MINING CORRESPONDENCE.

ENGLISH MINES.

HOLMBURG MINING COMPANY.

Sept. 19.—Hitchins's shaft is sunk below the 100 fathom level 5 fms. S.E., and the ground is more favourable for sinking. In the 110 fathom level, on the south side, west of Goldsworthy's wing, the hole is one foot wide, and worth 10d. per fathom; on the north side, west of the wing, no alteration; east of the wing the hole is twenty inches wide, and worth 10d. per fathom. In the 100 fathom level, west of Hitchins's, there is no alteration; the hole in the eastern slopes, in the back of this level, is twenty inches wide, and worth 10d. per fathom; in the western slopes the hole is sixteen inches wide, and worth 10d. per fathom; in the cross-cut south of Wall's shaft, towards the Flapjack hole, the ground is hard for driving. In the ninety fathom level, west of Hitchins's shaft, there is no alteration since last reported; in the slopes east of Hitchins's shaft the hole is two and a half feet wide, and worth 10d. per fathom; in the slopes west of ditto, the hole is twenty inches wide, and worth 10d. per fathom. In the eighty fathom level, east of Wall's shaft, the hole is twenty inches wide, producing good stones of ore; at this level west the hole is ten inches wide, producing stones of ore; in the south cross-cut the ground is favourable for driving; at this level, east of the great cross-course, the hole is one foot wide, and worth 10d. per fathom; the north hole, at this level, is fifteen inches wide, composed of capel, spar, and mastic; in the deep adit level, east of Lady Beau shaft, no hole taken down during the past week. The pitches continue to look well. T. RICHARDS.

BEDFORD UNITED MINING COMPANY.

Sept. 19.—The hole in the forty fathom level, east of Blount's engine-shaft, is about twenty inches in width, composed chiefly of spar and mastic, with good stones of copper ore in places. The thirty-three fathom level, west of the new engine shaft, is still driving south to cut the hole, in which direction it is expected it has been thrown by the cross-course—from the small branches of copper ore met with in the cross-cut, it is thought that the hole cannot be far off; in the thirty-three fathom level east the hole is about two and a half feet wide, composed of gossan and mastic with black and grey ore intermixed, worth about 10d. per fathom. The hole in the twenty-five fathom level is about two feet wide, composed of spar, mastic and ore, but of present will not more than pay for washing—it is, however, a very promising hole; the wing in the bottom of this level, seek about seven fathoms below, and in which the hole is worth at least 10d. per fathom, is still suspended, on account of quicksands of water—it is expected, however, to be shortly let down by the thirty-five fathom level, when driven a few fathoms further east, which will admit of efficient and profitable working of the wing and ore ground to the east and west. The engine-shaft, now down about four fathoms below the thirty-five fathom level, is in the cross-course, so that the character and quality of the hole cannot be reported. The pitches are looking very well, and the prospects of the mine may be said to be progressively improving. J. H. HYDE.

CONSOLIDATED TRETOIL MINING COMPANY.

Sept. 19.—The hole in the fifty fathom level, west of Howwood's shaft, is ten inches wide, tribute ground; the hole in the fifty fathom level, east of Howwood's shaft, is fifteen inches wide, producing a small quantity of ore. The hole in the forty fathom level, east of Howwood's shaft, is fifteen inches wide, good tribute ground.—We have sampled this day 102 tons of ore. H. WILLIAMS. J. MORCOM.

UNITED HILLS MINING COMPANY.

Sept. 19.—In Williams's shaft no hole broken since last reported. In the eastern end of the seventy fathom level the hole is three and a half feet wide, two feet ore of fair quality; in the western end the hole is four feet wide, nine inches in the north part good ore. In the sixty fathom level, east of Howwood's shaft, the hole is two and a half feet wide, one foot on the north part producing ore; rather improved since last week. East of James's shaft the hole is five feet wide, very throughout, but not rich; west of James's shaft the hole is nine feet wide, four feet ore of average quality. East and west of Nott's wing, hole four and a half feet wide, very throughout, of fair quality. West of diagonal shaft, the hole is four feet wide, two feet on the north part producing ore of fair quality. In the wing the hole is three feet wide, one foot on the north part good ore; in the slopes, in the back of this level (James's), the hole is eight feet wide, four feet ore of average quality. In diagonal shaft there has been no hole broken for the past week. In the eastern end of the fifty fathom level, the hole is three and a half feet wide, eighteen inches ore of good quality; in the wing the hole is two and a half feet wide, one foot on the north part producing good ore. In Gibson's shaft no alterations for the past week. In Turner's shaft the hole is four and a half feet wide, two and a half feet ore of fair quality. In Hill's shaft the hole is two feet wide, producing but a small quantity of ore. In Hill's shaft the hole is two feet wide, producing but a small quantity of ore. On Stacey's hole, in the twenty fathom level, nothing done in this end for the past week; in the wing, sinking below this level, the hole is three feet wide, two feet good ore. N. LANGDON.

CALLINGTON MINING COMPANY.

Sept. 19.—In the eighty, west of Christie, the hole is one foot wide, with no ore; in the eighty-east fifteen inches wide, worth 10d. per fathom. In the seventy-east the hole is at present split in branches, and poor. The seventy-east is three feet wide, worth 10d. per fathom. The fifty-east is two and a half feet wide, worth 10d. per fathom. In Good Fortune shaft, sinking below the fifty, the hole is about eighteen inches wide, producing good stones of ore. The fifty-east is one foot wide, worth 10d. per fathom; the fifty-west is three feet wide, worth 10d. per fathom. The thirty-four east is two and a half feet wide, mastic and ore; the thirty-four east is three feet wide, much the same in appearance. The twenty-west is worth 10d. per fathom. W. SYMONS.

CALLINGTON MINING COMPANY.

Sept. 19.—I beg to say at the north engine-shaft we have sunk about 3 fathoms 3 feet below the fifty fathom level; at this level driving south through the past week, we have had a rich course of silver-lead ore, more particularly in the bottoms of the level; contrasting this level with the levels above, there is every indication of a very productive hole in depth. At the fifty fathom level south, no same hole, we find it about six inches wide, holding silver lead ore. The forty fathom level south continues unproductive. The fifty fathom level east, on copper hole, is about eight inches wide, holding copper, with mastic and spar. The thirty fathom level east, on copper hole, is about ten inches, composed of spar and mastic, with some good stones of ore. Our tribute pitches are looking favourable. Hardwood drift still progresses through favourable ground. At the south mine the engine is fast getting into order, and other works in a state of forwardness.

JOSEPH T. PHILLIPS.

Sept. 19.—The ground is Buckingham's shaft, below the eighty-five fathom level, is still bad. The eighty-five east, on Wheal Jewel shaft, is eighteen inches to two feet wide, of a more promising appearance, and letting out a great deal of water. The hole in the eighty-five west has not been taken down since our last. The seventy-west on the same hole is worth 10d. per fathom. The wing sinking below this level is two feet wide, and will produce four tons of good ore per fathom, worth 10d. to 10d. per fathom. In the wing sinking under the seventy-east the hole is worth 10d. per fathom. At the seventy-east, on the new hole, we have taken down the hole since our last; the ground about it is very favourable. Buckingham's diagonal shaft, sinking below the forty-two fathom level, the hole is fifteen inches wide, worth 10d. per fathom.

WHEAL JEWEL MINING ASSOCIATION.

Sept. 19.—The ground is Buckingham's shaft, below the eighty-five fathom level, is still bad. The eighty-five east, on Wheal Jewel shaft, is eighteen inches to two feet wide, of a more promising appearance, and letting out a great deal of water. The hole in the eighty-five west has not been taken down since our last. The seventy-west on the same hole is worth 10d. per fathom.

The wing sinking below this level is two feet wide, and will produce four tons of good ore per fathom, worth 10d. to 10d. per fathom. In the wing sinking under the seventy-east the hole is worth 10d. per fathom. At the seventy-east, on the new hole, we have taken down the hole since our last; the ground about it is very favourable. Buckingham's diagonal shaft, sinking below the forty-two fathom level, the hole is fifteen inches wide, worth 10d. per fathom.

ST. MARY'S LEAD MINING COMPANY.

Sept. 19.—In the 120 fathom level the hole is three feet wide, producing ore, but not rich. In the 110 fathom level the hole is one foot wide, producing some promising work. In the 100 fathom level the hole is two feet wide, the hole in the 90 fathom level the hole is eighteen inches wide, composed of capel, spar, and silver lead ore. In the 80 fathom level the hole is two feet wide, composed chiefly of soft spar, interspersed with silver lead ore. In the 70 fathom level the hole is large, but coarse for ore. In the 60 fathom level the hole is three feet wide, producing some ore, but also of a coarse quality. In the thirty-five fathom level the hole is six inches wide, producing very work. We sold on the 11th last, two parcels of silver-lead ore, viz. No. 1, eighty-six tons at 10d. per ton, & No. 2, twenty-eight tons at 10d. per ton. At the North Mine we have again commenced sinking the engine-shaft below the thirty fathom level, and also continuing driving our cross-cut west at the same level. At Wheal Hennock the engine shaft is now between six and seven fathoms below the surface.

ST. MARY'S LEAD MINING COMPANY.

Sept. 19.—Murray's engine-shaft, sinking below the sixty fathom level, will be completed to the seventy by the end of the present month; the ground is a white manganiferous sandstone, and favourable for sinking; the hole is large and producing some work. In the thirty-five fathom level, west of Murray's shaft, we have again cut into the north hole, and find it three feet wide, on the whole, poor; we have prepared these ends to drive work of the great engine-shaft at the seventy fathom level to intersect the Chilcotian hole which is distant, as we conceive, about three fathoms; this done, our intention is to go up, re-enter the course, with a view to prove whether any of the rock-shale veins of lead (seen by the former proprietors) to hold down as far as the twenty-five fathom level) are again present; their presence is at a deeper level. Since our last report we have made but very little progress towards rising in the back of the seventy fathom level west, for the purpose of being to the wing, in consequence of having lost the check to our bottom bit, by which reason the seventy fathom level has been filled with water during the whole of the week; this, however, is now remedied, and

everything is again in good working order. The north hole, in the wing, sinking below the sixty fathom level, is still very, and without much alteration, for the last week or two past. The stones in the sixty fathom level continue very good, producing quantities of rich work. We sampled on Friday last, computed sixty tons of ore of good quality.

J. WEBB. R. ROWE, Jun.

TINCROFT MINING COMPANY.

Sept. 19.—I beg to hand you my report.—The hole in the seventy fathom level, east and east, in two feet wide, good work for copper ore, worth 10d. per fathom; the west end same level is worth 10d. per fathom. No hole taken down in the sixty east since my last; the hole in the sixty west is two feet wide, worth 10d. per fathom; the wing sinking under the sixty east is worth 10d. per fathom; the pitchen in the back of this level continues to look well. The hole in the fifty east is two feet wide, worth 10d. per fathom, leaving good back and bottom; the rise in the back of the fifty east is worth 10d. per fathom, in the fifty west, on counter, is worth 10d. per fathom; the wing in the bottom of the fifty east is worth 10d. per fathom; the wing in the back of this level also continues to look well. The hole in the forty east is in four feet wide, producing some good stones of copper ore, with some tin, worth 10d. per fathom—here, I expect, we shall have a much better hole soon, as we are getting into the same channel of ground as in the level below, the wing sinking under the forty west has the same feet base unproductive, but is now producing some good stones of ore, and very kindly; the forty west is at present yielding but a small quantity of ore. At Palmer's, the wing sinking under the sixty-five fathom level is producing some ore, and increasing as we sink; the sixty-five west is producing some good stones of ore, and very kindly; the same may be said of the rise in the back of the fifty-five west. At the south mine we continue to rise good work for the wing; the stones in the back of the eighty-one and ninety, and also from some of the others. On the whole, I am glad to say, our mine has very much improved, since my last. W. PAGE.

FOREIGN MINES.

PARAGUAY, Sept. 19.—The Royal mail steamer *Daedalus*, Commander Homley, has arrived; her dates are—from Jamaica the 1st, and from St. Thomas's the 1st ult., and from Paray the 13th inst. She has brought twenty-five passengers, and one freight 600 cwt., 300 lbs. of silver, and 100 lbs. of gold.

Barb. 20.—By Her Majesty's packet *Petrel*, Llant. Crooke, notices have been received from Rio de Janeiro to July 21, from Bahia in the 20th, and from Pernambuco to August 6. Freight about 26,000t. Passengers, Mr. Oliviera, in the same five miners.

[We have been unable to lay before our readers such correct mining intelligence, received by these packets, in our present Number, as we could have wished, but shall prepare ample details for next week's Journal.]

BRAZILIAN COMPANY.

Copa Branca, June 14.—I inclose a letter from the mining captain (Williams), relative to the Semidouro. Of the four samples I had taken, none proved good, though the stone was all very good-looking. One gave at the rate of 200 tons of ore to 1 lb.

